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931275



Investigation Plan for Leaking Multi-Aquifer Wells in the St. Peter Aquifer



CERTIFIED MAIL
RETURN RECEIPT REQUESTED

February 1, 1994

Regional Administrator
United States Environmental
Protection Agency, Region 5
ATTN: Darryl Owens
Mail Code 5HS-11
230 South Dearborn Street
Chicago, Illinois 60604

President
Reilly Industries, Inc.
1510 Market Square Center
151 North Delaware
Indianapolis, Indiana 46204

Director, Solid and Hazardous
Waste Division
Minnesota Pollution Control Agency
ATTN: Site Response Section
520 Lafayette Road North
St. Paul, Minnesota 55155

Commissioner
Minnesota Department of Health
717 Delaware Street S.E.
P.O. Box 9441
Minneapolis, MN 55440

RE: United States of America, et al. vs. Reilly Tar &
Chemical Corporation, et al.
File No. Civ. 4-80-469

Gentlemen and Commissioner O'Brien:

Pursuant to receipt of a December 16, 1993 Agency letter and the provisions of Section 10.2.1. of the Remedial Action Plan in the referenced case, the City respectfully submits a revised "Investigation Plan for Leaking Multi-Aquifer Wells in the St. Peter Aquifer". Comments regarding the content of the submittal may be directed to this office.

Sincerely,

A handwritten signature in blue ink that reads "James N. Grube".

James N. Grube
Director of Public Works

JNG/cmr
enclosure

cc: Elizabeth Thompson, Popham-Haik Law Firm (w/o enclosure)
Bill Gregg, ENSR Consulting & Engineering (w/2 enclosures)
Reilly File (w/enclosure)

Investigation Plan for Leaking
Multi-Aquifer Wells in the St.
~~Peter~~ Aquifer



**INVESTIGATION PLAN FOR LEAKING
MULTI-AQUIFER
WELLS
IN THE ST. PETER AQUIFER**

INVESTIGATION PLAN FOR LEAKING
MULTI-AQUIFER WELLS IN THE ST. PETER AQUIFER

SUBMITTED TO THE

REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

EXECUTIVE DIRECTOR
MINNESOTA POLLUTION CONTROL AGENCY

COMMISSIONER
MINNESOTA DEPARTMENT OF HEALTH

BY

THE CITY OF ST. LOUIS PARK, MINNESOTA

PURSUANT TO
REMEDIAL ACTION PLAN
SECTION 10.2

UNITED STATES OF AMERICA, ET AL

vs.

REILLY TAR AND CHEMICAL CORPORATION, ET AL

UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
CIVIL NO. 4-80-469

February 1, 1994

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SECTION A
SITE MANAGEMENT PLAN

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1.0 INTRODUCTION

1.1 Purpose and Scope

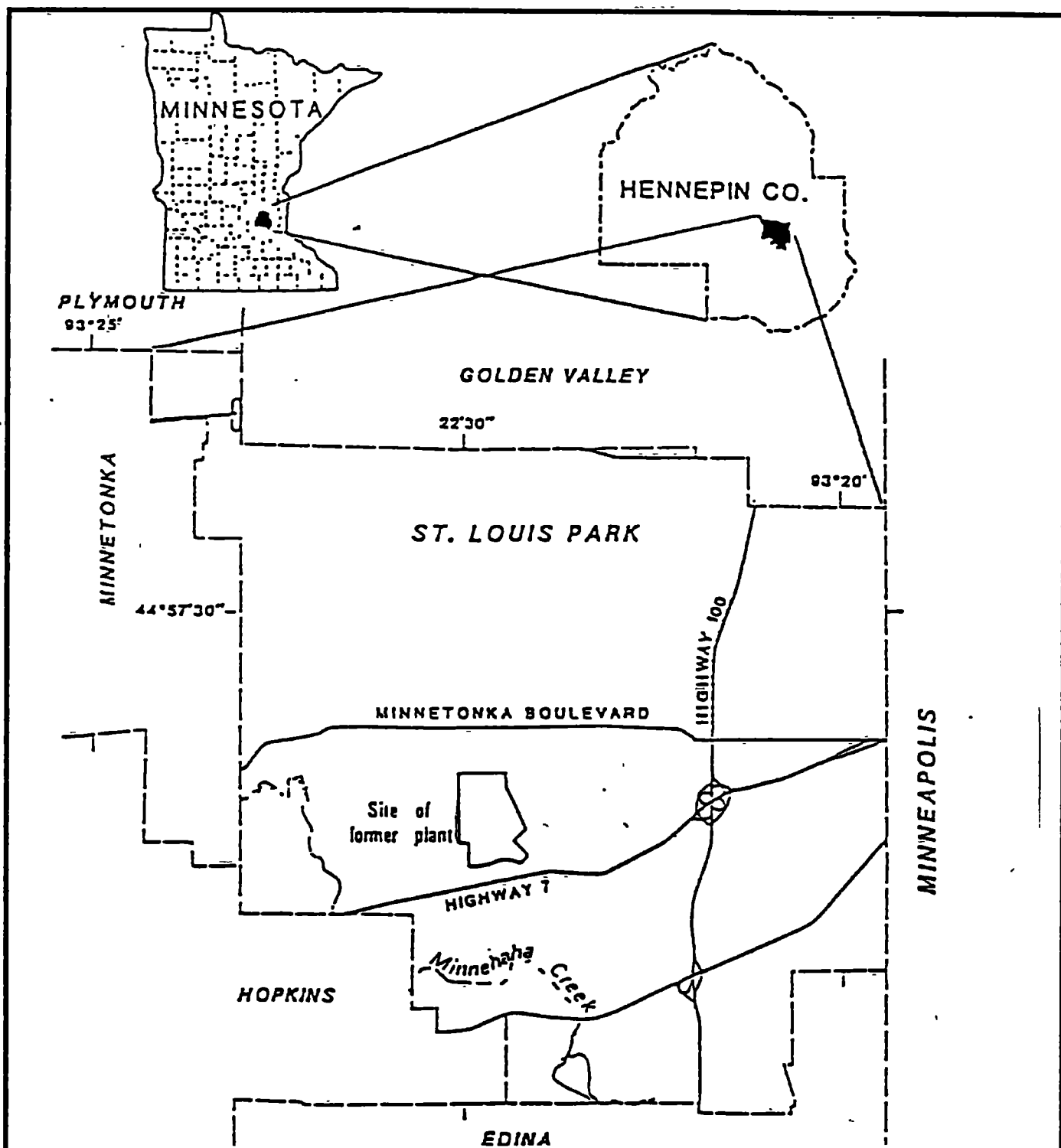
This Site Management Plan outlines the scope of work to be performed in order to identify and investigate leaking multi-aquifer wells (MAW) affecting the St. Peter Aquifer within a portion of the City of St. Louis Park, Minnesota. This work shall be completed in accordance with the Consent Decree - Remedial Action Plan (CD-RAP) for the Reilly Tar & Chemical Corporation (Reilly) National Priority List (NPL) site in St. Louis Park, Minnesota. Included in this plan are:

- Background information
- Well Investigation Plan
- Reporting requirements

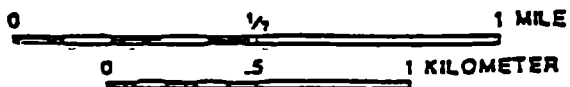
1.2 Background

The former Reilly site occupies 80 acres in St. Louis Park (Figure 1-1). A coal tar refinery and wood preserving plant was operated at the site from 1917 to 1972. In 1972 the site was sold and converted to residential and recreational uses. Also a divided four lane avenue and storm sewer improvements were constructed on the site. Soil and surficial ground water contamination by a variety of coal-tar-related chemicals have been observed in the immediate vicinity of the former plant site. In addition, polynuclear aromatic hydrocarbons (PAH), which are constituents of creosote and coal tar, have been measured in certain bedrock aquifers in the St. Louis Park area.

The CD-RAP was developed to address the contamination problem in St. Louis Park and includes: the installation of a granular activated carbon (GAC) drinking water treatment system at St. Louis Park municipal wells numbers 10 and 15; a system of pumping wells designed to remove and/or control the flow of PAH and phenolic contaminants in aquifers beneath St. Louis Park; remedial actions at and around the site which will reduce the infiltration of water, thus controlling the movement of PAH and phenolics from contaminated surficial geological deposits and allowing for safe use of the site and adjacent affected areas; monitoring of contaminants in all aquifers and in drinking water for St. Louis Park and selected neighboring communities to track the movement of contaminants and monitor their occurrence in drinking water; and other actions which will be implemented if contaminants are found to move in a manner which is not anticipated at this time.



SOURCE: From USGS Water Supply Paper 2211



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FIGURE 1-1
LOCATION MAP

DRAWN: DWJ	DATE: December 21, 1993	PROJECT NO.: 1620013500	REV: 0
FILE NO:	CHECKED: WMG		

The two aquifers of concern for this multi-aquifer well investigation are the Drift-Platteville and St. Peter Aquifers. Figure 1-2 presents the inferred extent of contamination for the Drift-Platteville Aquifer. The area of the Drift-Platteville Aquifer depicted in Figure 1-2 may be considered a source of contamination into the St. Peter Aquifer via any leaky multi-aquifer well, and will be the central focus of the investigation described in this Work Plan. The study area boundaries (Figure 1-3) provide a wide "buffer zone" around the area of interest, to ensure that all potentially relevant MAW are identified.

The St. Peter Aquifer gradient control well (W410) will control the spread of PAH and phenolics within the aquifer. Figure 1-2 also shows the approximate capture zone for well W410, based upon 1993 water levels. The actual ground water contour maps developed from 1993 water levels along with data will be presented in the March 15, 1994, Annual Monitoring Report for 1993.

1.2.1 Multi-Aquifer Well Hydraulics

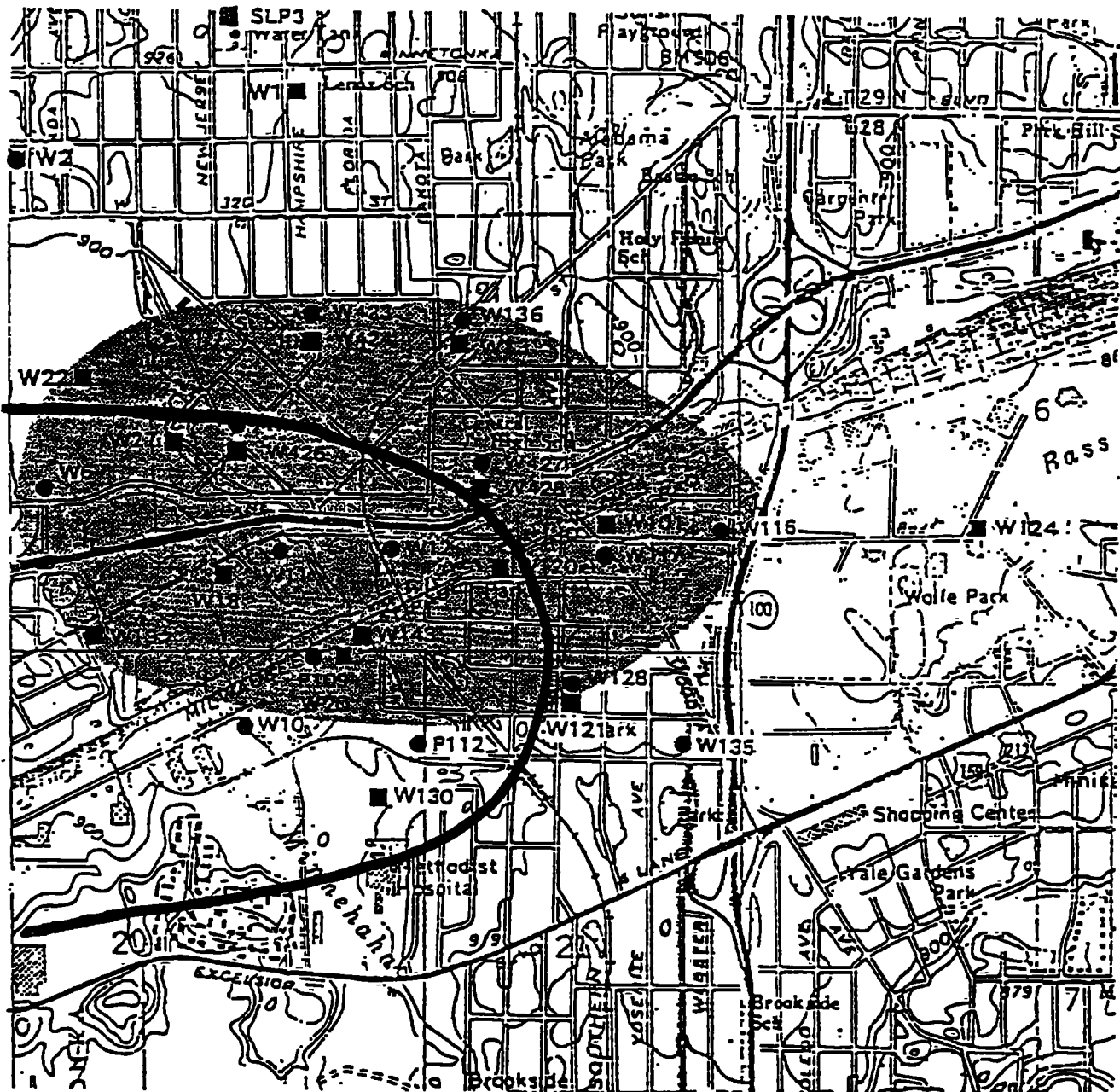
Any well that is hydraulically connected to more than one aquifer is by definition a multi-aquifer well (MAW). Such wells may provide pathways for shallow contaminants to migrate into deeper aquifers. Recognizing this potential problem, the Minnesota Water Well Construction Code now prevents the construction of MAW. Most MAW are therefore old and a corresponding lack of information necessitates this investigation.

The movement of water between aquifers in a MAW may be due to original open-hole construction, leaks in the casing, and/or flow in the annular space between casing and borehole. Water may then flow from one aquifer to another in response to differences in hydraulic head between aquifers. Within the study area the hydraulic head decreases with depth, and flow in MAW is downward. The water level in a MAW is a function of each aquifer open to the well (Figure 1-4), and local ground water gradients may be modified as a result (Hult and Schoenberg, 1984).

1.2.2 Consent Decree Requirements

The CD-RAP requires that within 180 days of the receipt of the decision for remedial actions in the St. Peter Aquifer (pursuant to RAP Section 8.3) a plan for investigating suspected multi-aquifer wells open to the St. Peter Aquifer must be submitted to the U.S. Environmental Protection Agency (EPA), Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Health (MDH). The CD-RAP requires that wells which may be leaking water exceeding any of the Drinking Water Criteria for PAH, or 10 micrograms per liter of phenolics, into the St. Peter Aquifer outside the capture area of the St. Peter Aquifer gradient control system





Explanation

- Drift Wells
- Platteville wells
- ▨ Inferred area of contamination
- U Well W410 capture zone

Approximate scale



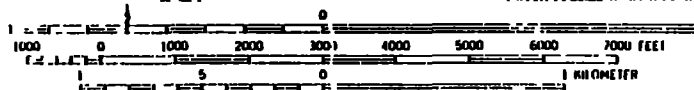
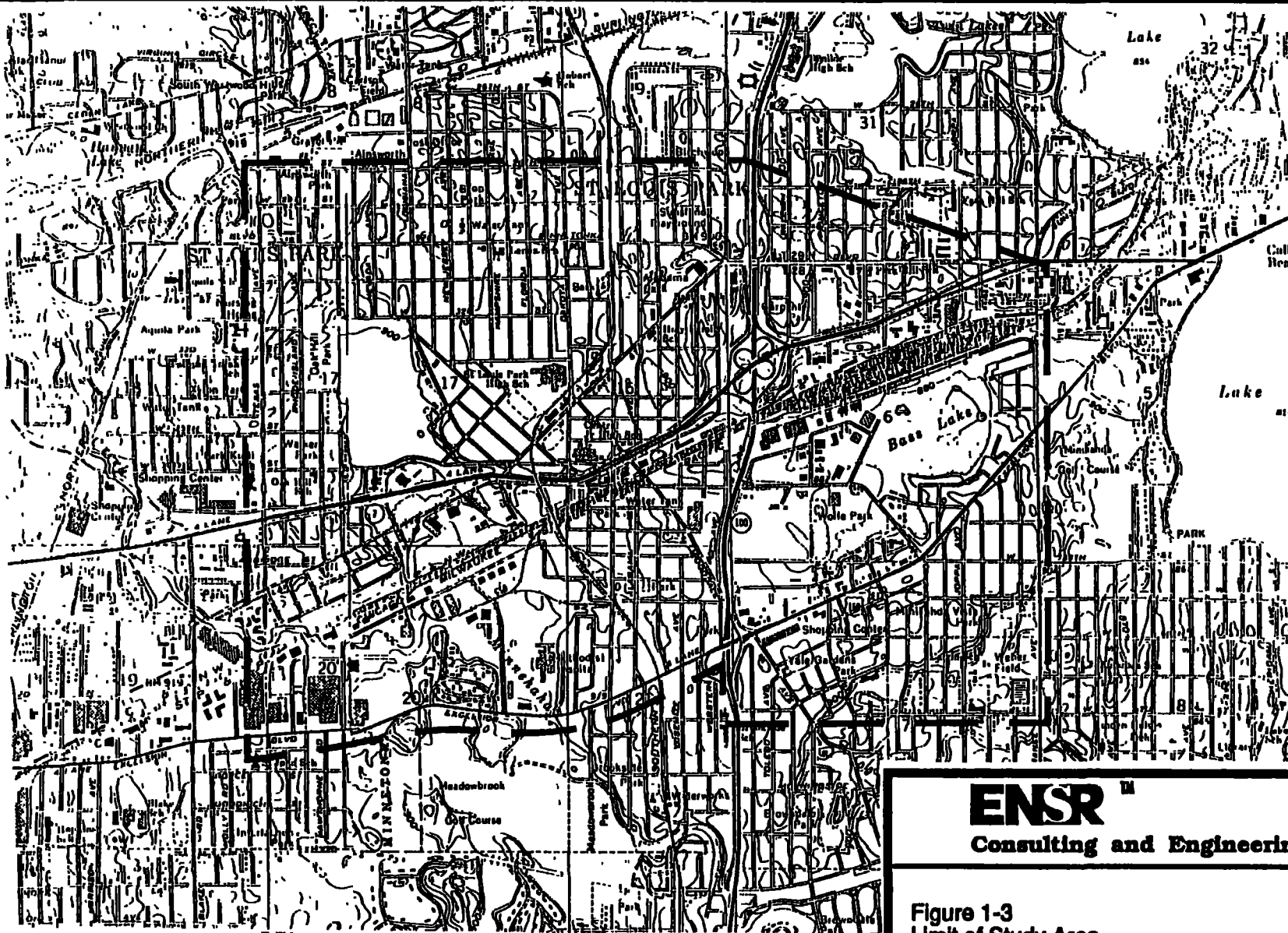
ENSR™ Consulting and Engineering

Figure 1-2
**INFERRED AREA OF CONTAMINATION IN
 THE DRIFT-PLATTEVILLE AQUIFER AND
 WELL W410 CAPTURE ZONE**
 Reilly Chemical and Tar Site
 St. Louis Park, Minnesota

FILE 1620013a

DATE 1/21/94

FILE NO. 1620-013-500



SCALE

ENSR

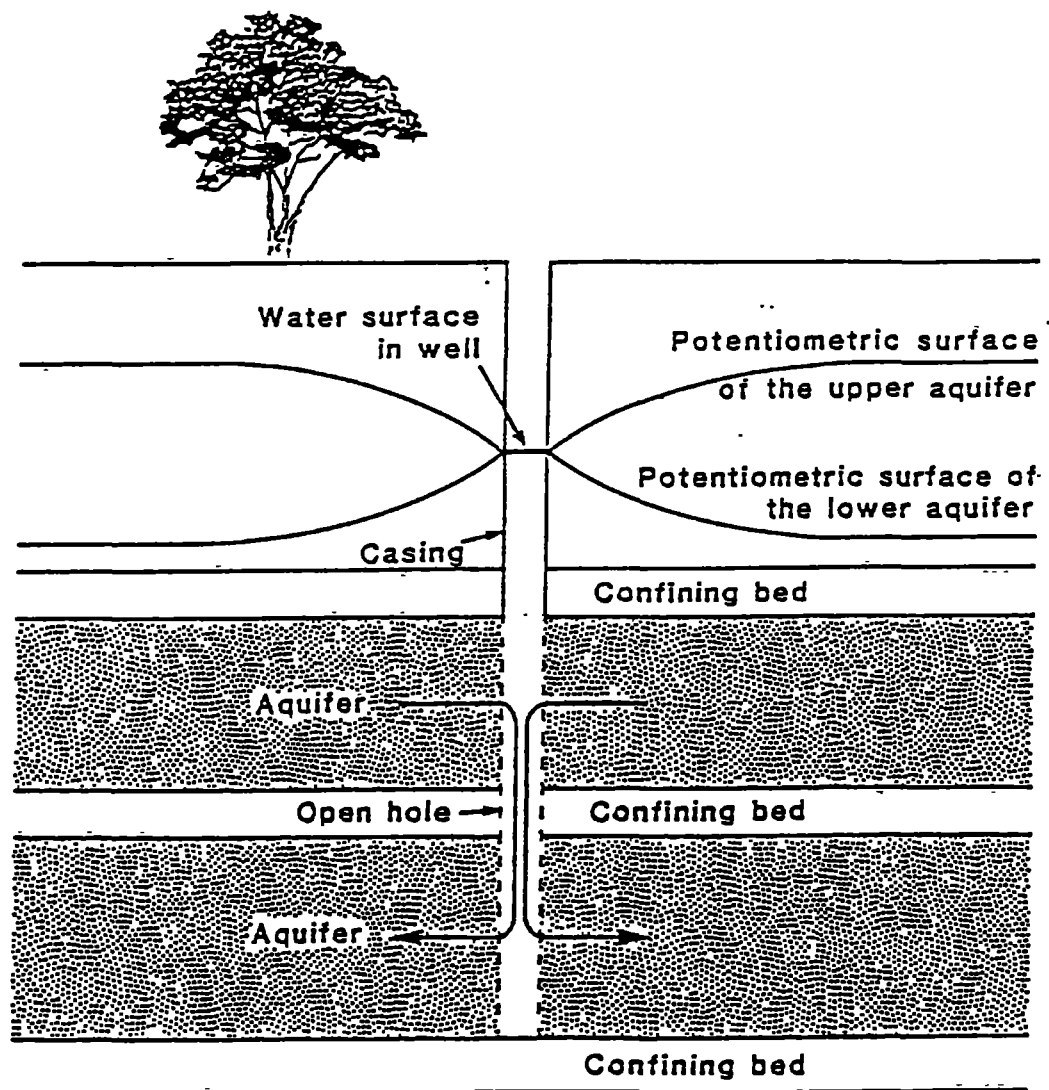
Consulting and Engineering

Figure 1-3
Limit of Study Area
St. Peter Aquifer MAW
St. Louis Park, Minnesota

FILE: 1620013x

DATE: 1/20/94

PRJ. NO.: 1620-013-500



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Figure 1-4

SCHEMATIC HYDROLOGIC SECTION
SHOWING MAW HYDRAULICS
(Hult and Shoenberg, 1984)

DRAWN: DWJ	DATE: December 21, 1993	PROJECT NO.: 1620013500	REV: 0
FILE NO.:	CHECKED: WMG		

(Well W410) must be investigated. This Work Plan exceeds the minimum scope given in the CD-RAP by enlarging the area of investigation to include inside the capture area of well W410. In this manner, any changes in the capture area of well W410 (i.e., if well W410 meets cessation criteria) will not trigger a further need to investigate and/or remedy additional St. Peter Aquifer MAW (per CD-RAP Section 10.3).

The techniques for analyzing each such suspected deep multi-aquifer well must include at a minimum for each well: static water level measurements; water quality monitoring; spinner logging; caliper logging; and E- or natural gamma logging. Additional investigation techniques such as downhole television logging are permitted.

1.2.3 Previous Study

In 1983, E.A. Hickok & Associates (Hickok) compiled a summary of information for all of the wells in the study area (Appendix 1). Information collected from drillers, government agencies, and a door-to-door survey included: unique well number; owner; location; geologic log; casing schedule; depth; and current status (active, inactive, existence uncertain, abandoned). The Hickok study area includes the entire study area for the Drift-Platteville and St. Peter Aquifers (Figure 1-3). The Hickok summary provides information on all wells identified by previous studies of the Reilly site, including all wells known by the USGS. Since 1983, additional and updated information has been compiled in the County Well Index (CWI). This information was also reviewed in the study area defined on Figure 1-3. The study includes areas northeast of W136, north of W424 and east of W101, as requested by MPCA (1993, Appendix 2).

1.2.4 Potential Multi-Aquifer Wells in the St. Peter Aquifer

In accordance with the Consent Decree - RAP, this multi-aquifer well investigation will focus on wells that meet each of the following requirements:

- The well is located within the inferred area of contamination in the Drift-Platteville Aquifer (Figure 1-2)
- The well is located outside of the capture area of the St. Peter Aquifer gradient control system
- The well is known to be, or may be, a Drift-Platteville/St. Peter multi-aquifer well as evidenced by Hickok (1983) or the CWI

Candidate MAW will be further investigated by making geophysical logs and collecting ground water samples. The geophysical logs will include spinner (flow) log, caliper log, and natural gamma log. Ground water samples representative of the deepest aquifer penetrated by the well will be collected and analyzed for PAH and phenolics in accordance with the procedures given in the 1994 Annual Sampling Plan (1993). For this purpose, samples will be collected from the discharge of a submersible pump, positioned at the deepest level possible in the well, once field measurements of pH, conductivity, and temperature have stabilized in accordance with MPCA procedures (Sabel and Clark, 1985).

1.4 Reporting Requirements

Upon completion of all field and laboratory activities, a report will be issued that includes the findings of the investigation and recommendations for MAW reconstruction or abandonment. The report will contain all data collected during this study including field measurements and copies of geophysical logs. Video logs of the wells will be described in the text of the report, and will be retained by the City of St. Louis Park for subsequent viewing by the Agencies if requested. The report will be issued within one year of approval of this Work Plan, as required by the CD-RAP.

2.0 REFERENCES

City of St. Louis Park Zoning Records, 1987.

City of St. Louis Park, 1989. "St. Peter Aquifer Remedial Investigation Report." March, 1989.

City of St. Louis Park, 1993. "Annual Monitoring Report for 1992." March, 1993.

E.A. Hickok and Associates, 1983. "Technical Memorandum, February 16, 1983, Tables Revised, June, 1983: St. Louis Park Well Abandonment Project - Well Search and Inventory."

Hult, M.F. and Schoenberg, 1984. "Preliminary Evaluation of Ground Water Contamination by Coal-Tar Derivatives, St. Louis Park Area, Minnesota." U.S. Geological Survey Water Supply Paper 2211.

Minnesota Pollution Control Agency, Letter to the City of St. Louis Park. Re: United States of America et al, vs. Reilly Tar and Chemical Corporation et al. File No. CIV 4-80-469. December 16, 1993.

Sabel, G.V. and T.P. Clark, 1985. "Procedures For Ground Water Monitoring: Minnesota Pollution Control Agency Guidelines." April 1985.

Wahl, T.E. and R.G. Tipping, 1991. "Ground Water Data Management - The County Well Index." Prepared by the Minnesota Geological Survey and the University of Minnesota.

APPENDIX 1

Hickok Report County Well Index

NOTES

- | No. * | |
|-------|--|
| | Well omitted because logs show it is not a multi-aquifer well that terminates in the St. Peter Aquifer |
| 1 | Well omitted because well is located beyond study area boundaries |
| 2 | Well omitted due to abandoned status |
| 3 | Well omitted due to construction or reconstruction |
| 4 | USGS or Hickok report well log indicates this is not a St. Peter multi-aquifer well |
| 5 | CWI indicates this is not a St. Peter multi-aquifer well |

SLP - WSI

RECEIVED

FEBRUARY 16, 1983

*Attached Tables Revised
June 1983 HJS*

FEB 22 1983

MINN. POLLUTION
CONTROL AGENCY

ST. LOUIS PARK WELL ABANDONMENT PROJECT -
WELL SEARCH AND INVENTORY

THIS TECHNICAL MEMORANDUM SUMMARIZES THE WELL
SEARCH AND INVENTORY IN THE ST. LOUIS PARK
AREA. OVER 500 WELLS WERE LOCATED IN ADDITION
TO THE NEARLY 300 PREVIOUSLY KNOWN WELLS. AN
INVENTORY OF 815 WELLS IS INCLUDED WITH
VARIOUS INFORMATION ON THE WELLS. THE
ACCOMPANYING BASE MAP AND OVERLAYS SHOW THE
LOCATION OF EACH WELL.

PREPARED BY:
E.A. HICKOK / ASSOC.

TECHNICAL MEMORANDUM

Enclosed is a summary of the Well Search and Inventory conducted in St. Louis Park, and portions of Hopkins and Edina.

Introduction

The project area includes St. Louis Park, Hopkins east of Highway 18 and the area of Edina north of Interlachen Boulevard and West 50th Street.

Several agencies were contacted to supply information on known wells in the project area. The Minnesota Geological Society (MGS) supplied computerized printouts of wells in the project area. Additional wells have been coded but not entered on the computer system at this time. The U.S. Geological Survey (USGS) supplied information on selected wells in the St. Louis Park area. The Minnesota Department of Health (MDH) provided information on several wells pertinent to this inventory. St. Louis Park, Edina and Hopkins were contacted to assist in locating additional wells within their respective cities. St. Louis Park was especially helpful in supplying records on specific properties. In addition, well drilling companies were contacted to supply information within the project area.

This file search produced approximately 300 wells. Many of these are commercial, industrial or municipal wells.

An intensive search was made of the door-to-door search area. The door-to-door search area includes the area bounded by west 28th Street on the north, France Avenue on the east, West 40th Street and Excelsior Boulevard on the south and Virginia Avenue on the west. According to the 1980 census there are 18,055 housing units in St. Louis Park. A housing unit is a house, an apartment, a group of rooms, or a single room, occupied as separate living quarters, or if vacant, intended for occupancy. In addition, commercial/industrial facilities were contacted within the door-to-door search area.

Approximately 7300 owners or occupants were contacted within the door-to-door search area. These contacts yielded approximately 4500 responses. Those who were not available during the first attempt were requested to contact the contractor. Three hundred seventeen owners or occupants returned calls. The second attempt was made by phone producing approximately 1000 responses. A third attempt yielded an additional 800 responses. Approximately 700 owners (less than 10%) were not available during the attempted contacts.

Over 500 suspected wells were found during the door-to-door search. An attempt was made to visit each of these wells in order to gather further information, verify the location of the well, and photograph the well casing, pump, or other evidence of the well.

Discussion

Most of the "new" wells found in the well search were residential wells. As expected, few of the owners were able to supply additional information. A search of property files, building permits and specific requests to well drillers may produce more information. It is anticipated that a majority of these wells are approximately 100 feet deep.

Several wells in the project area were located from information supplied by local well drillers. In those cases considerably more information is known about the wells.

A table is attached to this memorandum which includes pertinent information for each well in the St. Louis Park area. The key at the beginning of the table will aid in interpreting the data. The wells are listed in numerical order by unique well number. Project numbers are listed where they have been assigned. The owner and location are given. In some cases a government agency is listed as owner. Geologic logs and casing schedules are given where available. Where there is only one number given for the log with no formation, the number indicates the depth of the well. Other places the formation is listed with no depths. This indicates the formation in which the well is finished. The 'C' code indicates the certainty of the data. In some cases there is no uncertainty but at the same time there is little data. This would indicate certainty of the information presented. The 'A' code indicates the activity of the well. The unknown (0) category includes wells which are known to exist but their current status is uncertain. The active (1) category includes wells which are currently being used for potable use or in a few cases are intended to be used for potable use as in the case with several St. Louis Park municipal wells. The active (2) category includes wells which have been used recently or could be used but are not intended for potable use. Those include residential wells used for watering lawns, industrial/commercial wells for air conditioning and monitoring wells. Category 3 includes inactive wells. The wells were installed, casings still exist and in some cases pumps are attached but they are not functional. Category 4 lists suspected wells. Wells are suspected to exist at these locations but no verification has been possible. The abandoned (5) category includes only those wells which are known to have been properly abandoned. The following tables lists the number of wells in each category.

ACTIVITY OF WELLS

Category

0 - Unknown	310
1 - Active, potable	36
2 - Active, other	74
3 - Inactive	245
4 - Suspected	142
5 - Abandoned	8
Total:	815

The status of each well is given to show the verification of each well. In the case of MGS, USGS and MDH, these agencies have done previous work in verifying the location and use of these wells. Wells which were visited in the field but a photograph was useless or impossible to obtain were listed as FIELD verified. Wells which were field-verified and a photograph taken were given a PHOTO status. In some cases, citizens preferred not to be visited. These were given a OWNER status. Some of these owners reported there was nothing left to see. Some owners indicated the presence of a well but were unavailable for a follow-up visit. These wells are listed with a NONE status indicating no verification.

The map overlay on which each well is located is shown. Overlay 1 includes those wells which had previously been assigned unique well numbers. Overlay 2 shows wells which were found in this search and inventory. Overlay 3 shows locations of wells which are suspected to exist. Nearly twice as many wells have been found to exist than were known previously.

The source or sources of data from which their information was gathered is shown under source.

Mapping

A set of maps and overlays accompany this memorandum. A base map includes the project area as described earlier. The base map is divided in two pieces. The northern portion includes the project area in St. Louis Park north of 34th Street. The southern portion includes areas of St. Louis Park, Hopkins and Edina south of 34th Street. Wells which had previously been identified and assigned a unique well number are mapped on overlays IN and IS. Overlay IN covers the northern base map; overlay IS covers the southern base map. These overlays include 284 well locations scattered throughout the project area.

The second set of overlays (2N and 2S) locate wells known to exist based on this well search and inventory. These overlays indicate the locations of 385 wells concentrated in the door-to-door search area. Notice that certain areas seem to have a concentration of wells indicating development of an area prior to installation of city water.

Suspected wells which have not been verified are mapped on the third set of overlays (3N and 3S). These overlays show the suspected location of an additional 146 wells. Many of these wells are again located within the door-to-door search area.

Conclusion

Over 500 wells were found in this search and inventory. Presentation of all known and suspected wells will aid in getting a big picture of the groundwater contamination problem in St. Louis Park. This study located more wells than were thought to exist in the project area. It is anticipated that in some areas every house has a well, even though homeowners indicated otherwise.

Additional information should be sought on the wells found during this search and inventory.

KEY FOR ST. LOUIS PARK WELL INVENTORY

Columns	Description			
1-6	Unique Well Number			
8-11	Project Number			
13-30	Owner			
32-47	Location			
49	City:	S - St. Louis Park	E - Edina	H - Hopkins
51-58	Phone Number			
60-63	Elevation, NGVD, feet			
66-76	Geologic Log, depth, feet and formation			
	QUA	Quaternary	FRN	Franconia
	PVL	Platteville	SLF	St. Lawrence -
	GWD	Glenwood		Franconia
	PGW	Platteville -	IGL	Ironton - Galesville
		Glenwood	ECR	Eau Claire
	STP	St. Peter	MTS	Mt. Simon
	PDC	Prairie du Chien	CUN	Cambrian,
	JDN	Jordan		undifferentiated
	STL	St. Lawrence	PRC	Precombrian,
				Red Clastics
78-87	Casing Schedule, depth, feet and diameter, inches			
90	Certainty	0	No uncertainty	
		1	More than one log, uncertain depth	
		2	More than one location, location unsure	
		3	Both 1 and 2	
		4	Other uncertainty	
93	Activity	0	Unknown	
		1	Active, intended for potable use	
		2	Active, not for potable use, able to yield water, watering lawn, air condition, monitoring, etc.	
		3	Inactive	
		4	Suspected	
		5	Abandoned	
96-100	Status:	MGS	Minnesota Geological Survey	
		USGS	U.S. Geological Survey	
		MDH	Minnesota Department of Health	
		FIELD	Field verified, No photo	
		PHOTO	Field verified; photo	
		OWNER	Citizen reports nothing to see or preferred no visit, not field verified	
		NONE	No verification	
104	Map Overlay:	1	Known wells with unique well No's.	
		2	New wells assigned unique well No's.	
		3	Suspected wells	
108-117	Source:	0	Minnesota Geological Survey	
		1	U.S. Geological Survey	
		2	Minnesota Department of Health	
		3	Municipality	
		4	Driller	
		5	Building permits	
		6	Property records	
		7	Water and sewer billing records	
		8	Citizen	
		9	Other	

ST. LOUIS PARK

WELL SEARCH AND INVENTORY

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE					909	0-100 QUA 100-107 PVL 107-272 STP 272-280 PDC	0-246 4	0	0	MGS	1	01 4
149710	100	U.S.G.S.	31st & Oregon	S	910	0- 73 QUA 73- 89 PVL	0- 74 4	0	2	USGS	1	01 4
149711	101	U.S.G.S.	36 and Wooddale	S	910	0- 80 QUA 80-106 PGW	0-103 4	0	2	USGS	1	01 4
160018	24	U.S.G.S.	Lake & Louisiana	S	893	0- 81 QUA 81- 83 PVL 83- 86 GWD 86- 90 STP	0- 81 8 0- 87 4	0	2	USGS	1	01 4
160030	116	U.S.G.S.	36th & Webster	S	910	0- 67 QUA	0- 63 4	0	2	USGS	1	01 4
160031	117	U.S.G.S.	36th & Wooddale	S	918	0- 72 QUA	0- 68 4	0	2	USGS	1	01 4
165576	120	U.S.G.S.	36th & Brunswick	S	920	0- 96 QUA 96-107 PVL 107-109 GWD	0- 98 4	0	2	USGS	1	01 4
165577	121	U.S.G.S.	Justad Park	S	918	0-115 QUA	0-109 4	0	2	USGS	1	01 4
165578	122	U.S.G.S.	39th & Yosemite	S	920	0-120 QUA 120-239 STP	0-217 4	0	2	USGS	1	01 4
165579	124	U.S.G.S.	36th & Beltline	S	882	0- 71 QUA 71- 80 PVL 80- 85 GWD 85- 86 STP	0- 74 4	0	2	USGS	1	0 4
165580	123	U.S.G.S.	36th & Yosemite	S	910	0- 90 QUA 90-100 PVL 100-103 GWD	0- 93 4	0	2	USGS	1	0 4
165581	126	U.S.G.S.	40th and Quentin	S	915	0-103 QUA 103-123 PGW	0-111 4	0	2	USGS	1	0 4
165582	127	U.S.G.S.	Mrsnside & Brdale	S	880	0- 71 QUA 71- 90 PGW	0- 75 4	0	2	USGS	1	0 4
165583	128	U.S.G.S.	Justad Park	S	920	0- 67 QUA	0- 63 4	0	2	USGS	1	0 4
165584	129	U.S.G.S.	3984 Alabama	S	913	0-117 QUA 117-122 STP	0-118 4	0	2	USGS	1	0 4

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source	
X 3 165585	130	U.S.G.S.	NW Meth. Hosp Lt S		887	0- 80 QUA 80- 85 PVL 85- 86 GWD 86- 88 STP	0- 80 4	0	2	USGS	1	0 4	
165586	131	U.S.G.S.	6200 Lake Street S		887	0- 94 QUA 94-107 PVL 107-108 GWD	0- 97 4	0	2	USGS	1	0 4	
165587	132	U.S.G.S.	6317 Cambridge S		902	0- 84 QUA 84- 93 PVL	0- 86 4	0	2	USGS	1	0 4	
165588	133	U.S.G.S.	36th & Alabama S		917	0-109 QUA 109-122 STP	0-116 4	0	2	USGS	1	0 4 8	
165589	134	U.S.G.S.	36th & Alabama S		917	0- 73 QUA	0- 69 4	0	2	USGS	1	0 4	
165590	135	U.S.G.S.	39th & Yosemite S		920	0- 80 QUA	0- 76 4	0	2	USGS	1	0 4	
165591	136	U.S.G.S.	6200 Lake Street S		916	0- 53 QUA	0- 53 4	0	2	USGS	1	0 4	
165592	137	U.S.G.S.	S. of 7, N of Lk S		891	0- 70 QUA 80- 87 PVL 87- 87 GWD	4 0 2	0	2	USGS	1	0 4	
NON-RESPONSIVE						885		0	0	MGS	1	0	
X 200538		Gen. Off. Prod.	4521 Hwy. 7	S 925-7500	915	0- 60 QUA 60- 81 PVL 81- 82 GWD 82- 98 STP	0- 62 4	1	3	FIELD	1	0 2 4 8	
NON-RESPONSIVE						890		0	0	USGS	1	0123	
NON-RESPONSIVE						895		0	0	MGS	1	0	
NON-RESPONSIVE						915		0	1	3	USGS	1	0123 8
NON-RESPONSIVE						900		0	1	1	MGS	1	0 9
								0- 89 24					
								0-304 18					
								106-277 STP					
								277-398 PDC					
								398-470 JDN					
								470-490 STL					

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

880						0- 70 QUA 70- 86 PVL	0- 70 4	0	0	USGS	1	01
905						0-201 QUA 201-244 STP 244-277 PDC	0-232 4	0	0	MGS	1	0
905						0- 86 QUA 86-115 PVL 115-120 GWD 120-284 STP 284-414 PDC 414-497 JDN	0- 87 10 87-151 8 151-333 6	0	0	MGS	1	0
875						0- 56 QUA	0- 52 4	0	0	MGS	1	0
885						0- 70 QUA 70- 98 PVL	0- 72 4	0	0	MGS	1	0
885						0- 66 QUA 66- 89 PVL	0- 66 4	0	0	MGS	1	0
883						0- 71 QUA 71- 90 PVL 90- 93 GWD 93-214 STP 214-328 PDC	0- 73 8 73-228 6	0	0	MGS	1	0
900						0- 76 QUA 76-109 PVL 109-121 GWD 121-253 STP	0- 76 6 76-2254.5	0	0	MGS	1	0
925						0-104 QUA 104-136 PVL 136-290 STP	0-104 16	0	3	MGS	1	0 2 9
894						0- 73 QUA 73- 93 PVL 93-260 STP 260-385 PDC 385-504 JDN 504-554 STL 554-813 CUN 813-950 MT'S	12	1	3	FIELD	1	01 4
895						0- 65 QUA 65- 91 PVL 91- 91 STP	0- 71 4	0	3	USGS	1	01 34



Unique
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NON-RESPONSIVE

890	0- 70 QUA 70- 85 PVL	0- 70	4	0	0	MGS	1	0	7
880	0- 65 QUA 65- 80 PVL	0- 70	4	0	0	MDH	1	0	2 7
890	0- 54 QUA 54- 67 PVL		4	0	0	MGS	1	0	7
915	0-126 QUA 126-276 STP	0-219	5	0	0	MGS	1	0	4
865	0-170 QUA 170-233 STP 233-236 PDC	0-192	5	0	0	MGS	1	0	4
875	0- 80 QUA 80-235 STP		5	0	0	MGS	1	0	
885	0-107 QUA	0-107	5	0	0	MGS	1	0	4 7
890	0-108 QUA 108-246 STP	0-200	5	0	0	MGS	1	0	4
880	0- 73 QUA 73-247 STP	0-193	4	0	0	MGS	1	0	4
875	0- 78 QUA 78-243 STP 243-303 PDC	0-194	8	0	0	MGS	1	0	4
870	0- 94 QUA 94-250 STP 250-292 PDC	0-223	5	0	0	MGS	1	0	4
895	0- 60 QUA 60- 80 PVL 80- 90 STP	0- 69	4	0	0	MGS	1	0	4
885	0- 92 QUA 92-167 STP 167-168 PDC	0- 98	8	0	0	MGS	1	0	
885	0- 83 QUA 83- 86 PVL 86-150 STP		4	0	2	OWNER	1	0	2 8
890	0- 75 QUA 75- 96 PVL 96- 97 STP	0- 77	5	0	0	PHOTO	1	0	4 8
915	0- 79 QUA 79- 89 PVL		5	0	1	FIELD	1	0	78

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Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

940						0-112 QUA 112-127 PVL	0-112 4	0	0	MGS	1	0 9
935						0-118 QUA 118-130 PVL 130-250 STP 250-420 PDC 420-500 JDN	0-256 16 88-267 12 0-274 10 292-308 8	0	0	MGS	1	0 3
930						0-105 QUA 105-120 PVL 120-134 STP	0-105 4	0	0	MGS	1	0 2
940						0-115 QUA 115-130 PVL 130-135 GWD 135-146 STP	0-108 6	0	5	MGS	1	0
915						0- 90 QUA 90-105 PVL 105-110 GWD 110-133 STP	0- 84 4	0	0	MGS	1	0 7 9
920						0-105 QUA 105-128 PVL 128-294 STP 294-310 PDC 310-495 JDN 495-500 STL	0-310 30 0-425 24	0	1	MGS	1	0 4 9
930						0- 91 QUA 91-105 PVL 105-107 GWD 107-264 STP	0- 91 5 91-233 4	4	0	MGS	1	0 4
925						0- 95 QUA 95-113 PVL 113-117 STP	4	0	0	MGS	1	0 9
925						0- 98 QUA 98-112 PVL 112-117 GWD 117-283 STP 283-405 PDC 405-466 JDN	0-283 8	0	0	MGS	1	01 9
920						0-102 QUA		0	0	MGS	1	0

NON-RESPONSIVE

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE					920	0-100 QUA		4	0	0	MGS	1 0 9
						100-108 PVL						
					930	0-105 QUA	0-105	4	0	0	MGS	1 0
						105-121 PVL						
						121-123 GWD						
					925	0-100 QUA	0-103	5	0	0	MGS	1 01 9
						100-118 PVL						
						118-119 GWD						
						119-126 STP						
					915	0- 79 QUA		4	0	0	MGS	1 0
NON-RESPONSIVE						79- 94 PVL						
						94-260 STP						
					930	0-109 QUA	0-115 24	0	1	MGS	1 0 2 9	
						109-120 PVL	0-305 20					
						120-132 GWD						
						132-285 STP						
						285-407 PDC						
						407-450 JDN						
						450-465 STL						
					915	0- 86 QUA	0- 85	4	2	0	MGS	1 0 34
NON-RESPONSIVE						86-112 PVL						
					915	0- 80 QUA		24	0	1	MGS	1 0 9
						80-110 PVL		20				
						110-116 GWD						
						116-240 STP						
						240-460 PDC						
						460-475 JDN						
					920	0-117 QUA	0-114	3	0	0	MGS	1 0
					920	0- 81 QUA	0- 80	4	0	0	MGS	1 0 4 9
						81-107 PVL						
NON-RESPONSIVE						107-107 STP						
					925	0- 80 QUA	0- 81	4	0	0	MGS	1 0 34
						80- 99 PVL						
					925	0- 85 QUA		5	0	0	MGS	1 0 9
						85-112 PVL						
						112-136 STP						
					925	0-100 QUA		3	0	0	MGS	1 0
						100-115 PVL						
						115-120 GWD						
						120-130 STP						

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE					910	0-102 QUA		4	0	0	MGS	1 0
					905	0- 91 QUA		5	0	0	MGS	1 0 9
						91-105 PVL						
						105-105 STP						
					950	0-244 QUA	0-253	5	0	0	MGS	1 0
						244-301 STP						
						301-337 PDC						
					955	0-162 QUA	0-165	4	0	0	MGS	1 01
						162-168 PVL						
					945	0-178 QUA			0	0	MGS	1 0
						178-305 STP						
						305-307 PDC						
					925	0-136 QUA	0-101	3	0	0	MGS	1 0
						136-140 STP						
					940	0-123 QUA		3	0	0	MGS	1 0
					935	0-166	0-166	4	0	0	MGS	1 0
						166-292 STP	0- 88	3				
					935	0-104 QUA	0-109	24	0	0	MGS	1 0 9
NON-RESPONSIVE						104-119 PVL	0-429	16				
						119-123 GWD						
						123-292 STP						
						292-412 PDC						
						412-494 JDN						
						494-494 STL						
					935	0-109 QUA	0-116	24	0	1	MGS	1 0 4
						109-122 PVL	0-955	16				
						122-126 GWD						
						126-295 STP						
						295-409 PDC						
						409-497 JDN						
NON-RESPONSIVE						497-545 STL						
						545-680 FRN						
						680-743 IGL						
						743-831 ECR						
						831-079 MTS						
						079-079 PRC						
					950	0-147 QUA			0	0	MGS	1 0 4
						147-156 STP						

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
203634		Restaurants, No	9808 Wayzata	S 546-2412	900	0- 69 QUA		0	0	MGS	1	0
						69- 74 PVL						
					940	0-126 QUA	0-250 24	0	1	MGS	1	0 4 9
						126-303 STP	0-311 16					
						303-413 PDC						
						413-495 JDN						
						495-507 STL						
					921	0- 93 QUA	0-103 16	0	0	USGS	1	01 3 9
						93-108 PVL	0-295 12					
						108-111 GWD						
						111-273 STP						
						273-391 PDC						
						391-479 JDN						
						479-496 STL						
					899	0- 94 QUA	0- 94 4	0	0	MGS	1	0 4
						94-108 PVL						
					890	0- 80 QUA		0	0	MGS	1	0 4
						80-185 STP						
					885	0- 52 QUA	0- 53 8	0	0	MGS	1	0 4
						52- 72 PVL	53-177 6					
						72-201 STP						
						201-290 PDC						
						290-291 JDN						
					885	0- 56 QUA	4 0 0	0	0	MGS	1	0 4
						56- 60 PVL						
					880	0- 54 QUA	0- 54 3	0	0	MGS	1	0 4
						54- 61 PVL						
					910	0- 88 QUA	0- 88 4	0	0	MGS	1	0
						88- 99 PVL						
						99-107 STP						
					900	0- 73 QUA	3 1 0	0	0	MGS	1	0 9
						73- 95						

NON-RESPONSIVE

NON-RESPONSIVE

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE						900	0- 94 QUA	0- 95 30	0	1	MGS	1 0 9
							94-101 PVL	0-212 24				
							101-270 STP	0-891 16				
							270-386 PDC					
							386-460 JDN					
							460-490 STL					
							490-655 FRN					
							655-714 IGL					
							714-800 ECR					
							800-040 MTS					
NON-RESPONSIVE							040-045 PRC					
						915	0- 87 QUA	4.5 0 0	0	0	MGS	1 0 9
							87-115 PVL					
						880	0- 70 QUA	0- 62 8	1	0	MGS	1 0 3 7 9
							70-128 STP	0- 84 4				
						880	0- 80 QUA	0- 63 4	0	0	MGS	1 0 3 9
						905	0-100 QUA	0-220 4	0	0	MGS	1 0
							100-266 STP					
							266-270 PDC					
						915	0-101 QUA	0-223 4	0	0	MGS	1 0
							101-270 STP					
							270-271 PDC					
						915	0- 88 QUA	0- 82 4	0	0	MGS	1 0 4 7
						910	0- 96 QUA	0-210 4	0	0	MGS	1 0
							96- 97 PVL					
							97-255 STP					
						895	0- 70 QUA	0- 62 3	0	0	MGS	1 0
						900	0- 73 QUA	0- 73 4	0	0	MGS	1 0
							73- 80 PVL					
							80- 82 GWD					
							82- 85 STP					
						910	0- 92 QUA	3 0 0	0	0	MGS	1 0
							92- 99 PVL					
						905	0- 75 QUA	0- 80 24	0	1	MGS	1 0 9
							75- 97 PVL	0-247 20				
							97-100 GWD					
							100-260 STP					
							260-380 PDC					
							380-440 JDN					
							440-446 STL					



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
206437		St. Louis Park #9	2500 Nevada Ave. S	920-3300	905	0- 69 QUA 69-120 PVL 120-275 STP 275-380 PDC 380-473 JDN	0- 81 24 0-289 16	0	1	MGS	1	0 9
NON-RESPONSIVE						910 0- 86 QUA 86-103 PVL 103-105 GWD 105-274 STP 274-394 PDC	0- 90 12 90-246 10	0	0	MGS	1	0 3 7 9
						925 0-101 QUA 101-120 PVL 120-288 STP 288-408 PDC 408-505 JDN 505-530 STL 530-683 FRN 683-745 IGL 745-853 ECR 853-078 MTS 078-095 PRC	0-880 16	0	1	MGS	1	0 4 9
						925 0-103 QUA 103-118 PVL 118-286 STP	0-103 24	0	1	MGS	1	0 9
						925 0-104 QUA 104-136 PVL 136-290 STP	0-104 16	0	3	MGS	1	0 9
						928 0-103 QUA 103-123 PVL 123-288 STP 288-407 PDC 407-500 JDN	0-106 24 0-315 16	0	1	MGS	1	0 9
						0-109 QUA 109-274 STP 274-398 PDC 398-486 JDN 486-540 STL	0-213 16 194-274 12	0	2	MGS	1	0 2 9
NON-RESPONSIVE												
NON-RESPONSIVE												



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source	
NON-RESPONSIVE						915	0-111 QUA 111-276 STP 276-397 PDC 397-475 JDN	0-211 8 184-288 6	0	2	PHOTO	1	01 3 789
206445	45	S & K Products	3520 Xenwood Ave.	S	905	0- 92 QUA 92- 94 PVL 94-122 GWD 122-265 STP 265-312 PDC	0-244 6	0	0	MGS	1	0 23 78	
NON-RESPONSIVE						895	0- 95 QUA	0- 90 2	0	0	MGS	1	0 4
NON-RESPONSIVE						895	0- 79 QUA	0- 79 3	0	3	PHOTO	1	0 8
* 206449	33	Strand Mfg. Co.	3629 Hampshire	S	905	79- 85 PVL 0- 80 QUA 80-100 PVL 100-102 GWD 102-182 STP	8 0 3	0	3	PHOTO	1	01 89	
206450	49	Stram Block Co.	6425 Goodrich	S	900	0- 72 QUA 72- 92 PVL 92- 96 GWD 96-260 STP 260-381 PDC 381-384 JDN	0- 77 8 0-241 6	0	0	USGS	1	01 4 9	
* 206451	65	Stram Block Co.	6425 Goodrich	S	904	0- 77 QUA 77- 93 PVL 93- 95 GWD 95-109 STP	0- 77 4	0	0	USGS	1	012 4 9	
206452		Methodist Hospital	6500 Excelsior	S	895	0- 60 QUA 60- 60 PVL	0- 57 16	0	3	USGS	1	0 34	
206454	29	Flame Industries	7317 W. Lake	S	895	0- 73 QUA 73- 90 PVL 90-251 STP 251-335 PDC	0- 77 10 0-257 8	0	0	USGS	1	0 3 7 9	
NON-RESPONSIVE							0- 55 QUA 55- 73 PVL	0- 58	0	0	MGS	1	0

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source	
NON-RESPONSIVE					915	0- 96 QUA 96-127 PVL 127-132 GWD 132-303 STP 292-427 PDC 427-515 JDN 515-550 STL 550-695 FRN 695-747 IGL 747-832 ECR 832-095 MTS	0- 99 30 0-270 24	0	1	MGS	1	0 9	
					915	0- 90 QUA 90-122 PVL 122-127 GWD 127-290 STP 290-417 PDC 417-480 JDN	0-108 24 0-303 20	0	1	MGS	1	0 9	
					895	0- 79 QUA 79- 90 PVL		4	0	0	MGS	1	0
					900	0- 86 QUA 86-116 PVL 116-120 GWD 120-125 STP	0- 86	4	0	0	MGS	1	0
					905	0- 73 QUA 73-103 PVL 103-108 GWD 108-130 STP	0- 73	4	0	0	MGS	1	0
					900	0- 77 QUA		2	0	0	MGS	1	0
					915	0- 87 QUA 87-107 PVL	0- 87	4	0	0	MDH	1	0 2
					915	0- 91 QUA 91-110 PVL	0- 93	4	0	0	MDH	1	0 2
					900	0- 74 QUA 74-103 PVL 103-110 GWD 110-150 STP	0- 75	6	0	0	MGS	1	0
					895	0- 70 QUA 70- 83 PVL	0- 70	4	0	0	MGS	1	0
				NON-RESPONSIVE					915	0- 96 QUA 96-127 PVL 127-132 GWD 132-303 STP 292-427 PDC 427-515 JDN 515-550 STL 550-695 FRN 695-747 IGL 747-832 ECR 832-095 MTS	0- 99 30 0-270 24	0	1
	915	0- 90 QUA 90-122 PVL 122-127 GWD 127-290 STP 290-417 PDC 417-480 JDN	0-108 24 0-303 20					0	1	MGS	1	0 9	
	895	0- 79 QUA 79- 90 PVL						4	0	0	MGS	1	0
	900	0- 86 QUA 86-116 PVL 116-120 GWD 120-125 STP	0- 86					4	0	0	MGS	1	0
	905	0- 73 QUA 73-103 PVL 103-108 GWD 108-130 STP	0- 73					4	0	0	MGS	1	0
	900	0- 77 QUA						2	0	0	MGS	1	0
	915	0- 87 QUA 87-107 PVL	0- 87					4	0	0	MDH	1	0 2
	915	0- 91 QUA 91-110 PVL	0- 93					4	0	0	MDH	1	0 2
	900	0- 74 QUA 74-103 PVL 103-110 GWD 110-150 STP	0- 75					6	0	0	MGS	1	0
	895	0- 70 QUA 70- 83 PVL	0- 70					4	0	0	MGS	1	0
NON-RESPONSIVE									915	0- 96 QUA 96-127 PVL 127-132 GWD 132-303 STP 292-427 PDC 427-515 JDN 515-550 STL 550-695 FRN 695-747 IGL 747-832 ECR 832-095 MTS	0- 99 30 0-270 24	0	1
					915	0- 90 QUA 90-122 PVL 122-127 GWD 127-290 STP 290-417 PDC 417-480 JDN	0-108 24 0-303 20	0	1	MGS	1	0 9	
					895	0- 79 QUA 79- 90 PVL		4	0	0	MGS	1	0
					900	0- 86 QUA 86-116 PVL 116-120 GWD 120-125 STP	0- 86	4	0	0	MGS	1	0
					905	0- 73 QUA 73-103 PVL 103-108 GWD 108-130 STP	0- 73	4	0	0	MGS	1	0
					900	0- 77 QUA		2	0	0	MGS	1	0
					915	0- 87 QUA 87-107 PVL	0- 87	4	0	0	MDH	1	0 2
					915	0- 91 QUA 91-110 PVL	0- 93	4	0	0	MDH	1	0 2
					900	0- 74 QUA 74-103 PVL 103-110 GWD 110-150 STP	0- 75	6	0	0	MGS	1	0
					895	0- 70 QUA 70- 83 PVL	0- 70	4	0	0	MGS	1	0
				NON-RESPONSIVE					915	0- 96 QUA 96-127 PVL 127-132 GWD 132-303 STP 292-427 PDC 427-515 JDN 515-550 STL 550-695 FRN 695-747 IGL 747-832 ECR 832-095 MTS	0- 99 30 0-270 24	0	1
	915	0- 90 QUA 90-122 PVL 122-127 GWD 127-290 STP 290-417 PDC 417-480 JDN	0-108 24 0-303 20					0	1	MGS	1	0 9	
	895	0- 79 QUA 79- 90 PVL						4	0	0	MGS	1	0
	900	0- 86 QUA 86-116 PVL 116-120 GWD 120-125 STP	0- 86					4	0	0	MGS	1	0
	905	0- 73 QUA 73-103 PVL 103-108 GWD 108-130 STP	0- 73					4	0	0	MGS	1	0
	900	0- 77 QUA						2	0	0	MGS	1	0
	915	0- 87 QUA 87-107 PVL	0- 87					4	0	0	MDH	1	0 2
	915	0- 91 QUA 91-110 PVL	0- 93					4	0	0	MDH	1	0 2
	900	0- 74 QUA 74-103 PVL 103-110 GWD 110-150 STP	0- 75					6	0	0	MGS	1	0
	895	0- 70 QUA 70- 83 PVL	0- 70					4	0	0	MGS	1	0
NON-RESPONSIVE									915	0- 96 QUA 96-127 PVL 127-132 GWD 132-303 STP 292-427 PDC 427-515 JDN 515-550 STL 550-695 FRN 695-747 IGL 747-832 ECR 832-095 MTS	0- 99 30 0-270 24	0	1
					915	0- 90 QUA 90-122 PVL 122-127 GWD 127-290 STP 290-417 PDC 417-480 JDN	0-108 24 0-303 20	0	1	MGS	1	0 9	
					895	0- 79 QUA 79- 90 PVL		4	0	0	MGS	1	0
					900	0- 86 QUA 86-116 PVL 116-120 GWD 120-125 STP	0- 86	4	0	0	MGS	1	0
					905	0- 73 QUA 73-103 PVL 103-108 GWD 108-130 STP	0- 73	4	0	0	MGS	1	0
					900	0- 77 QUA		2	0	0	MGS	1	0
					915	0- 87 QUA 87-107 PVL	0- 87	4	0	0	MDH	1	0 2
					915	0- 91 QUA 91-110 PVL	0- 93	4	0	0	MDH	1	0 2
					900	0- 74 QUA 74-103 PVL 103-110 GWD 110-150 STP	0- 75	6	0	0	MGS	1	0
					895	0- 70 QUA 70- 83 PVL	0- 70	4	0	0	MGS	1	0



Unique Well No.	Proj. No.	Owner	Location	Phone C. Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

905						0- 73 QUA 73-101 PVL 101-106 GWD 106-120 STP	0- 73 4	0	0	MGS	1	0	
						0-127 QUA 127-143 PVL	0-120 5	0	0	MGS	1	0	
928						0-116 QUA 116-143 PVL		5	0	0	MGS	1	0
917						0- 95 QUA 95-127 PVL	0- 95 5	0	0	MGS	1	0	
927						0-116 QUA 116-121 PVL		0	0	MGS	1	0	
905						0- 89 QUA 89-105 PVL		5	0	0	MGS	1	0
905						0- 97 QUA 97-101 PVL	0- 97 3	0	0	MGS	1	0	
905						0- 90 QUA 90-105 PVL 105-120 STP	0- 88 5	0	0	MGS	1	0	
895						0-120 QUA 120-280 STP	0-246 4	0	0	MGS	1	0 4	
895						0- 79 QUA 79- 95 STP	0- 79 4	0	0	MGS	1	0	
900						0- 89 QUA 89- 93 PVL 93-233 STP	0-190 4	0	0	MGS	1	0	
920						0-102 QUA 102-110 PVL 110-112 GWD 112-147 STP		6	0	0	MGS	1	0
915						0-104 QUA 104-125 PVL 125-128 GWD 128-292 STP 292-350 PDC	0-104 6 0-297 4	0	0	MDH	1	0 2	
935						0- 80 QUA 80-100 PVL 100-105 STP	0- 72 5	0	0	MGS	1	0	



Unique
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NON-RESPONSIVE

925	0-116 QUA	0-117	4	0	0	MGS	1	0	
	116-143 PVL								
	143-145 GWD								
	145-152 STP								
895	0- 96 QUA	0-179	4	0	0	MGS	1	0	
	96-106 PVL								
	106-108 GWD								
	108-197 STP								
905	0- 83 QUA	0- 97	5	0	0	MGS	1	0	
	83-103 PVL								
	103-160 STP								
895	0-188 QUA	0-207	4	0	0	MGS	1	0	
	188-250 STP								
	250-253 PDC								
900	0-210 QUA	0-218	5	0	0	MGS	1	0	9
	210-253 STP								
905	0-224 QUA	0-225	4	0	0	MGS	1	0	
	224-256 STP								
	256-284 PDC								
	0- 89 QUA	0-105	5	0	0	MGS	1	0	
	89- 91 PVL								
	91-126 STP								
	0- 80 QUA			0	0	MGS	1	0	
	80-168 STP								
	0-101 QUA	0- 96	6	0	0	MGS	1	0	
	101-262 STP	96-133	4						
				0	0	MGS	1	01	
905	0-104 QUA			0	0	MGS	1	0	
	104-264 STP								
	264-270 PVC								
905	0-102 QUA	0-226	4	0	0	MGS	1	0	
	102-256 STP								
895	0- 59 QUA	0- 76	4	2	3	PHOTO	1	01	8
	59- 90 PVL								
925	0-102 QUA	0-102	30	0	1	MGS	1	0	4 9
	102-124 PVL	0-402	24						
	124-288 STP								
	288-402 PDC								
	402-482 JDN								
	482-503 STL								

NON-RESPONSIVE

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
NON-RESPONSIVE												
216065	46	S-K Products	3520 Xenwood	S 929-0484	905	0- 92 QUA 92- 94 PVL 94-122 GWD 122-265 STP 265-312 PDC	0-234 6	2 0 0 0	0	USGS USGS	1 1	1 1 3 8
NON-RESPONSIVE												
216067	48	Methodist Hospital	6500 Excelsior	S 932-5000	891 890	JDN 0- 85 QUA 85- 94 PVL 94-257 STP 257-377 PDC 377-466 JDN 466-485 STL	0-255 20	8 0 0 0	0	USGS USGS	1 1	1 1 4
*2 216068	50	Prestolite Wire	220 W. 98th St.	S 888-6531	890			0 5	5	USGS	1	1
*2 216069	51	Androc Chemical Co	7301 Lake St.	S	892			4 0	5	USGS	1	1
*2 216070	52	Suburban Sanitary	Meadowbrk & Min.	S	920	0- 81 QUA 81- 95 PVL 95- 97 GWD 97-110 STP	0- 82 4	4 0 0 0	0	USGS	1	01 4
* 216071	53	Northland Aluminum	3245 Raleigh	S 920-2888	884			0 0	0	USGS	1	1 3
* 1 216072	54	Old Galachirche R.		H	920			6 2	0	USGS	1	1
NON-RESPONSIVE												
* 216075	57	Oak Hill School		S	935			4 0	0	USGS	1	1
NON-RESPONSIVE												
					935			2 0	0	USGS	1	1 3
						24	0- 15 6	0 5	5	USGS	1	1
*2 216078	60	Professional Bldg.	3645 Rhode Is.	S 938-7628	935	250		5 0	5	MDH	1	12 8
* 216079	61(216052)	?	Oxford & Edgewd.	S				2 0	0	USGS	1	1
* 1 216080	63	National Foods	1515 Excelsior	H	910	285		12 0	0	USGS	1	1 9
								10				
216081	66	Blacktop Service	Camb.& M'haha Cr	S	899	0- 86 QUA 86- 87 GWD 87-251 STP 251-280 PDC	0-212 6	6 0 0 3	3	USGS	1	01 4
216082	67	Blacktop Service	Camb.& M'haha Cr	S	912	0- 84 QUA 84- 85 GWD 85-105 STP	0- 84 3	3 0 3 3	3	USGS	1	01 4

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
216083	69	Hedberg-Friedheim	Wolf Lake	S	890	0- 71 QUA 71- 78 PVL 78- 81 GWD 81-246 STP 246-327 PDC 348		3	3	USGS	1	0 3
							230	2	5	USGS	1	1 3
					925	0-138 QUA 138-153 STP		0	0	USGS	1	0
					915	0- 87 QUA 87-114 PVL 114-120 GWD 120-144 STP	0- 90	6	0	0	USGS	1 01 4
					890	0- 82 QUA 82-100 PVL 100-265 STP 265-280 PDC		12	0	0	USGS	1 1 3 9
					905	0- 80 QUA 80- 89 PVL 89-245 STP 245-370 PDC 370-485 JDN 485-487 STL		0	3	USGS	1	1
					884	0- 67 QUA 67- PVL -130 STP	0- 67	6	1	3	PHOTO	1 1 3 78
					882	0-184		6	4	2	PHOTO	1 1 3 78
								0	2	PHOTO	1	1 8
								2	4	USGS	3	1
						250	12	0	0	USGS	1	1
					900	0- 90 QUA 90-100 PVL 100-230 STP		0	3	USGS	1	1
					875	0- 75 QUA 75-100 PVL 100-250 STP 250-390 PDC 390-495 JDN 495-710 SLF 710-755 IGL		0	0	USGS	1	1

NON-RESPONSIVE

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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✱ 216105 109 Max Renner's Shop

S

925

0- 93 QUA
93-113 PVL
113-118 STP

2

0

USGS

1

1

NON-RESPONSIVE

2

0

USGS

1

1

919

0-190 QUA
190-240 STP

0

0

USGS

1

12

8

✱ 216108 114 Hedberg-Friedheim

S

887

0- 60 QUA
60- 80 PVL
80-249 STP

0

0

USGS

1

1

216109 115 USGS

Louisiana Circle S

892

0- 65 QUA
65- 78 PVL
78- 78 GWD

0- 66

4

0

2

USGS

1

1

✱ 216128 144 Interior Elevator

S

0

0

USGS

1

1

216129 140 Cambridge Brick

S

PVL

4

1

0

USGS

1

1

✱ 218162 Echo Plastics

6514 Cambridge

S

895

0- 70 QUA
70- 85 PGW
85-190 STP

0- 76

6

0

0

MGS

1

0

3

NON-RESPONSIVE

900

0- 82 QUA
82- 95 PVL

0- 82

3

0

0

MGS

1

0

896

0- 80 QUA
80- 90 PVL

0- 80

3

0

0

MGS

1

0

899

0- 85 QUA
85- 92 PVL
92- 97 GWD

0- 85

3

0

0

MGS

1

0

905

0- 93 QUA
93- 99 PVL

0- 93

3

0

0

MGS

1

0

909

0- 90 QUA
90-100 PVL

0- 95

3

0

0

MGS

1

0

913

0- 94 QUA
94-101 PVL

0- 94

3

0

0

MGS

1

0

897

0- 80 QUA
80- 92 PVL

0- 80

3

0

0

MGS

1

0

897

0- 82 QUA
82- 94 PVL

0- 82

3

0

0

MGS

1

0

900

0- 83 QUA
83- 95 PVL

0- 84

3

0

0

MGS

1

0

900

0- 88 QUA
88- 99 PVL

0- 88

3

0

0

MGS

1

0

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

911						0- 90 QUA	0- 90	3	0	0	MGS	1	0
						90-101 PVL							
912						0- 92 QUA	0- 92	3	0	0	MGS	1	0
						92- 99 PVL							
916						0- 90 QUA	0- 90	3	0	0	MGS	1	0
						90- 98 PVL							
916						0- 97 QUA	0- 97	3	0	0	MGS	1	0
						97-105 PVL							
920						0-106 QUA	0-106	3	0	0	MGS	1	0
						106-117 PVL							
924						0-107 QUA	0-108	3	0	0	MGS	1	0
						107-118 PVL							
923						0-104 QUA	0-105	3	0	0	MGS	1	0
						104-115 PVL							
923						0-104 QUA	0-108	3	0	0	MGS	1	0
						104-124 PVL							
927						0-112 QUA	0-113	3	0	0	MGS	1	0
						112-125 PVL							
925						0-115 QUA		3	0	0	MGS	1	0
						115-128 PVL							
926						0-110 QUA	0-110	3	0	0	MGS	1	0
927						0-105 QUA	0-109	3	0	0	MGS	1	0
						105-121 PVL							
927						0-114 QUA	0-117	3	0	0	MGS	1	0
						114-121 PVL							
910						0- 97 QUA	0- 98	4	0	0	MGS	1	0
						97-108 PVL							
						108-170 STP							
905						0-100 QUA	0-100	4	0	3	MDH	1	0 2 4
						100-105 PVL							
						105-107 GWD							
						107-119 STP							
953						0-145 QUA	0-260	4	0	0	MGS	1	0
						145-298 STP							
919						0-122 QUA	0-122	4	0	0	MGS	1	0
892						0-188 QUA	0-188	3	0	0	MGS	1	0 4
						188-203 STP							

NON-RESPONSIVE

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NON-RESPONSIVE

224804 87 Metalloy Corp. Cedar Lk& Dakota S

886	0- 51 QUA	0- 45 3	2	0	MGS	1	0	
884	0- 68 QUA	0-205 4	0	0	MGS	1	0	4
	68- 72 PVL							
	72-255 STP							
920	0-101 QUA	0-101 4	0	0	MGS	1	0	
	101-121 PVL							
920	0- 50 QUA		4	0	MGS	1	0	4
919	0-104 QUA	0-98 4	0	0	MGS	1	0	34
	104-122 PVL							
925	0-107 QUA	0-107 4	0	0	MGS	1	0	
928	0-104 QUA	0-104 3	0	0	MGS	1	0	
	104-120 PVL							
	120-123 GWD							
930	0-189 QUA	0-182 4	2	0	MGS	1	0	
948	0-107 QUA	0-101 4	0	0	MGS	1	0	4
	107-134 PVL							
905	0-105 QUA	0-110 12	0	0	MGS	1	0	3
	105-113 PVL	0-258 10						
	113-258 STP							
	258-387 PDC							
	387-485 JDN							
			2	0		1	1	
	STP		2	0	USGS	1	1	
			2	0	USGS	1	1	
			2	0	USGS	1	1	
906	0- 94 QUA	0- 94 30	0	1	MGS	1	0	9
	94- 98 PVL	0-253 24						
	98-265 STP	0-389 16						
	265-375 PDC							
	375-475 JDN							
	475-485 STL							
	80		2	0	1 PHOTO	2		78
			0	4	NONE	3		7
			0	4	NONE	3		7
			0	0	NONE	2		9
			0	4	NONE	3	3	7
	100		2	3	NONE	2	2	7
			0	4	NONE	3		7

NON-RESPONSIVE

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NON-RESPONSIVE

* 232518 S & S Welding 6506 Cambridge S 929-6706
* 232519 S & S Welding 6510 Cambridge S 929-6706
* 232521 Viking Soap&Chem. 6529 Cambridge S 920-1303

NON-RESPONSIVE

232524 WTCN or WWTC Cedar Lk & Edge. S
232525 MN Sand & Gravel Cedar Lk & 100 S

NON-RESPONSIVE

232527 Carlson, R.E., Inc. 4903 Cedar Lk Rd S 374-3220

NON-RESPONSIVE

232534 Food Producers 2401 Edgewood S 544-2761

NON-RESPONSIVE

					0	4	NONE	2	3	8
					0	4	NONE	3		7
					0	1	PHOTO	2		7
104		4			0	1	PHOTO	2	23	78
					0	4	NONE	3		7
					0	4	NONE	3		7
					0	4	NONE	3		7
					2	4	NONE	3		7
					0	0	NONE	2		9
					0	4	NONE	3	3	
					0	4	NONE	3	3	
					0	4	NONE	3	3	
					0	4	NONE	3		7
					0	4	NONE	3	3	
0- 64 QUA	0-59	4			0	0	NONE	2	4	
450		10			0	0	NONE	2	3	
0-110 QUA	0- 88	16			0	0	NONE	2	4	
110-135 PVL	88-265	12								
135-295 STP	237-317	8								
295-415 PDC										
415-475 JDN										
475-481 STL										
0- 56 QUA	0- 56	4	0	0	NONE	2	34			
56- 69 PVL										
69- GWD										
			0	4	NONE	3	7			
			0	4	NONE	3	7			
			0	4	NONE	3	7			
18			0	0	MDH	2	2	7		
			0	4	OWNER	3	8			
0- 73 QUA	0- 73	4	0	0	NONE	2	4			
73- 80 PVL										
80- 82 GWD										
82- 85 STP										
503			10	0	0	NONE	2	4	7	
				0	3	OWNER	2		8	
				0	4	NONE	3		8	

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
* 232574		Engleside Dairy	4900 Excelsior	S				2	3	NONE	2	23
NON-RESPONSIVE												
* 232576		Twin Lakes Mesgr.	7700 Hwy. 7	S 933-1188		270		0	3	NONE	2	8
* 232577		Phillips Const. Co	Cedar Lk & 100	S		0- 70 QUA	0- 75 6	1	0	MDH	2	23
NON-RESPONSIVE												
NON-RESPONSIVE												
* 232579		Hall Equipment	2360 Hwy. 100	S		70- 78 PVL				NONE	2	4
NON-RESPONSIVE												
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NON-RESPONSIVE												

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

								0	4	NONE	3	7
								0	3	NONE	2	78
								2	4	NONE	3	7
								2	4	NONE	3	7
			PVL				2	0	0	MDH	3	2
								0	3	OWNER	2	8
			80					0	4	NONE	3	3
								0	2	PHOTO	2	3
								0	3	NONE	2	8
			0- 71 QUA	0- 71	6			0	0	NONE	2	4
			71- 83 PVL									
			83- 86 GWD									
			86-200 STP									
			340					0	0	NONE	2	4
								0	4	NONE	3	7
			0-107 QUA	0-107	4			0	0	NONE	2	4
								0	3	NONE	2	78
								0	3	OWNER	2	8
								2	4	NONE	3	7
								0	4	NONE	3	7
								0	4	NONE	3	3
			86		3			0	2	PHOTO	2	78
								0	4	NONE	3	7
			0- 80 QUA	0- 80	8			0	5	NONE	2	3
			80-150									
			105		3			0	1	PHOTO	2	2
			78		3			0	1	PHOTO	2	23
								0	4	NONE	3	7
								0	3	OWNER	2	78
								0	3	MDH	2	2
			243		4			2	0	NONE	2	3
								0	2	OWNER	2	8
								0	3	OWNER	2	8
			200		4			0	1	PHOTO	2	2
			0-199 QUA	0-193	5			0	0	NONE	2	4
			199-211 PVL									
			211-236 STP									
								0	4	NONE	3	7

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casting Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

0- 86 QUA	0- 81	4	0	0	NONE	2	4
86- 99 PVL							
99-103 GWD							
103-109 STP							
			0	4	NONE	3	7
			0	4	NONE	3	7
0- 88 QUA	0- 82	3	0	0	NONE	2	4
			0	3	OWNER	2	8
			0	3	OWNER	2	8
119			0	3	OWNER	2	8
0-140 QUA	0-140	4	2	3	NONE	2	4
140-158 PVL							
158-160 STP							
			0	3	OWNER	2	8
			0	3	OWNER	2	8
0- 56 QUA	0- 57	4	0	0	NONE	2	34
56- 66 PVL							
			0	4	NONE	3	3
			2	4	NONE	3	3
			0	3	OWNER	2	8
			0	4	NONE	3	7
45			0	3	MDH	2	2
			0	4	NONE	3	7
			2	4	NONE	3	7
			0	3	NONE	2	8
0- 89 QUA	0- 90	5	0	0	NONE	2	4
89-100 PVL							
100-103 STP							
			0	3	OWNER	2	8
0- 71 QUA	0- 71	2	0	0	NONE	2	4
			2	4	NONE	3	7
			2	4	NONE	3	7
70			1	3	OWNER	2	78
			0	4	NONE	3	8
90 PVL			0	1	MDH	2	2
			0	4	NONE	3	7
0- 90 QUA	0- 90	5	0	0	NONE	2	4
90-125 PVL							

Unique

Well Proj.

No. No. Owner

Location

Phone
C Number

Elev.

Geologic
LogCasing
Schedule

C

A

Status Map

Source

NON-RESPONSIVE

0- 85 QUA
85-104 PVL

0- 82 4

0 0

NONE 2

4

0 3

MDH 2

2 7

0 4

NONE 3

3

0 4

NONE 3

7

2 4

NONE 3

7

0 4

NONE 3

7

0 4

NONE 3

7

120

4

1 0

NONE 2

34

0 4

NONE 3

7

0-115 QUA
115-117 PVL

0-110 4

0 0

NONE 2

4

0 3

OWNER 2

8

0-115 QUA
115-298 STP
175

0-238 4

0 0

NONE 2

4

0 4

NONE 3

3

0 3

OWNER 2

8

0 4

NONE 3

3

JDN

4.5

0 3

OWNER 2

4

8

3

2

0 4

NONE 3

7

0 3

NONE 2

8

0 3

OWNER 2

8

0 4

NONE 3

7

40

0 3

MDH 2

2

2

0 3

PHOTO 2

2

8

0 3

PHOTO 2

2

8

4

0 3

MDH 2

2

6

0 3

MDH 2

2

0 1

MDH 2

2

0 3

MDH 2

2

4

0 3

MDH 2

2

1

0 2

PHOTO 2

2

8

105

2

0 3

MDH 2

2

108

4

0 1

MDH 2

2

75

0 1

MDH 2

2

0 3

MDH 2

2

4

0 1

MDH 2

2

0 3

FIELD 2

2

8

Unique
Well
No. Proj.
No. Owner

Location

Phone
C Number

Elev.

Geologic
Log

Casing
Schedule

C

A

Status Map

Source

NON-RESPONSIVE

90						0	1	MDH	2	2	7
100						0	1	PHOTO	2	2	8
						2	0	3	PHOTO	2	8
							0	3	MDH	2	
274							0	1	MDH	2	23
						12	2	3	MDH	2	2
							0	4	NONE	3	3
							0	4	NONE	3	3
							0	4	NONE	3	3
							0	4	NONE	3	3
							0	4	NONE	3	3
							0	4	NONE	3	3
							0	4	NONE	3	3
0- 98 QUA	0- 98	4				0	0	NONE	2	34	
							0	4	NONE	3	3
							0	4	NONE	3	3
0- 81 QUA	0- 81	3.5				0	0	NONE	2	4	
81- 99 PVL											
99-111 STP											
							0	4	NONE	3	3
							0	4	NONE	3	3
							2	4	NONE	3	3
							0	4	NONE	3	3
							0	4	NONE	3	3
0- 84 QUA	0- 84	4				0	0	NONE	2	4	
84- 96 PVL	84-210	3									
96-100 GWD											
100-244 STP											
800							1	3	OWNER	2	8
68							3	1	3	NONE	23
0- 73 QUA	0- 73	3				0	0	NONE	2	34	
73- 94 PVL											
0- 77 QUA	0- 74	4				2	0	NONE	2	4	
77- 95 PVL											

Unique

Well Proj.

No. No. Owner

Location

Phone
C Number

Elev.

Geologic
LogCasing
Schedule

C

A

Status Map

Source

0- 77 QUA	0- 72 4	0 0	NONE	2	4
77- 93 PVL					
0- 72 QUA	0- 72 4	0 0	NONE	2	4
72- 91 PVL					
0- 82 QUA	0- 76 4	1 0	NONE	2	34
82- 94 PVL					
0- 86 QUA	0- 82 4	0 0	NONE	2	4
86-106 PVL					
0- 85 QUA	0- 85	0 0	NONE	2	34
85-106 PVL					
		0 4	NONE	3	3
		0 4	NONE	3	3
18	2	1 3	OWNER	2	8
		0 3	OWNER	2	8
	4	0 3	PHOTO	2	8
130		1 3	OWNER	2	8
		0 3	OWNER	2	8
		0 3	OWNER	2	8
		0 3	OWNER	2	8
		0 3	OWNER	2	8
		0 3	OWNER	2	8
		0 3	OWNER	2	8
		1 3	OWNER	2	8
		1 3	OWNER	2	8
		0 1	OWNER	2	8
		0 2	OWNER	2	8
PVL	-2	0 0	MDH	2	2
		0 3	OWNER	2	8
		0 3	OWNER	2	8
		0 3	NONE	2	8
		2 3	NONE	2	8
130		0 0	MDH	2	2
90	2	0 3	OWNER	2	8
		2 3	OWNER	2	8
		0 3	OWNER	2	8
		4 3	OWNER	3	8
		2 3	OWNER	2	8
		0 3	OWNER	2	8
		0 3	OWNER	2	8

NON-RESPONSIVE

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source								
NON-RESPONSIVE													0	3	OWNER	2		8		
													120	0	3	OWNER	2	2	8	
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													2	4	OWNER	3		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													20	0	3	OWNER	2		8	
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													2	0	2	PHOTO	2		8	
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													0	3	OWNER	2		8		
													2	3	OWNER	2		8		
													0	3	FIELD	2		8		
													4	0	3	FIELD	2		8	
													100	0	3	FIELD	2		8	
													0	3	FIELD	2		8		
													110	6	0	3	FIELD	2	2	8
													8	4	3	PHOTO	2		8	
2	0	3	PHOTO	2		8														
0	2	PHOTO	2		8															
60	4	2	PHOTO	2	2	8														
2	0	3	PHOTO	2		8														
2	0	3	PHOTO	2		8														
2	4	3	PHOTO	2		8														
0	3	PHOTO	2		8															
2	0	3	PHOTO	2		8														
2	0	2	PHOTO	2		8														

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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* 232810 Ace Mfg, Inc. 3825 Edgewood S 929-1618

70

116

80

100

100

150

77

100

103

90

150

100

210

140

* 232831 Porter, C.H. 5921 Hamilton S 929-8858

5	0	3	PHOTO	2	8
	0	3	PHOTO	2	8
2	0	3	PHOTO	2	8
3	0	3	PHOTO	2	8
	0	2	PHOTO	2	8
	0	3	PHOTO	2	8
4	0	3	PHOTO	2	8
	0	3	PHOTO	2	8
	0	2	PHOTO	2	8
4	0	1	PHOTO	2	78
4	4	1	PHOTO	2	2 8
2	4	2	PHOTO	2	8
3	0	3	PHOTO	2	8
	0	2	PHOTO	2	8
	0	0	MDH	2	2
	0	2	PHOTO	2	8
2	0	3	PHOTO	2	8
4	0	3	PHOTO	2	8
	0	0	MDH	2	2
	0	3	PHOTO	2	8
	0	0	MDH	2	2
2	0	3	PHOTO	2	8
3	0	3	PHOTO	2	8
	0	2	PHOTO	2	2 8
	0	3	PHOTO	2	2 8
	0	3	FIELD	2	8
2	0	2	PHOTO	2	8
	0	3	FIELD	2	8
	1	3	FIELD	2	8
	0	3	FIELD	2	8
2	0	3	FIELD	2	8
2	1	2	PHOTO	2	2 8
2.5	0	2	FIELD	2	8
	0	3	OWNER	2	8
	0	3	PHOTO	2	8
2	0	3	PHOTO	2	8
2	0	3	PHOTO	2	8
3	0	3	PHOTO	2	8



Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source			
NON-RESPONSIVE						100		2	1	2	PHOTO	2	8		
								2	0	3	PHOTO	2		8	
								3	0	3	PHOTO	2		8	
									0	3	PHOTO	2		8	
						156		4	1	3	PHOTO	2		8	
						115			0	0	MDH	2		2	
						175			0	0	MDH	2		2	
									0	3	PHOTO	2		8	
						75			0	0	MDH	2		2	
						106			2	0	MDH	2		2	
									0	3	PHOTO	2		8	
						86			0	3	FIELD	2		8	
									0	3	FIELD	2		8	
									1	4	OWNER	3		8	
									0	3	FIELD	2		8	
									0	3	FIELD	2		8	
									0	3	FIELD	2		8	
									0	3	FIELD	2		8	
									0	3	PHOTO	2		8	
									0	3	PHOTO	2		8	
									0	3	PHOTO	2		8	
								2	0	3	PHOTO	2		8	
						80		2	1	2	PHOTO	2		2	8
						18			0	3	PHOTO	2			8
						100		2	1	3	PHOTO	2			8
									0	3	PHOTO	2			8
						50			0	3	PHOTO	2		2	8
						100			2	0	MDH	2		2	
									0	3	PHOTO	2			8
								2	0	3	PHOTO	2			8
									0	3	PHOTO	2			8
						95			2	0	MDH	2		2	
									0	2	PHOTO	2			8
									0	3	PHOTO	2			8
						100			0	0	MDH	2		2	
						100			0	3	PHOTO	2			8
									0	3	PHOTO	2			8
						90			1	1	PHOTO	2			78
									0	0	MDH	2		2	

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

								2	0	3	PHOTO	2	8
								4	0	3	PHOTO	2	8
									0	3	FIELD	2	8
									0	3	FIELD	2	8
									2	3	NONE	3	8
			25						2	0	MDH	2	2
								2	0	3	FIELD	2	8
								2	0	3	FIELD	2	8
			84					2	0	3	OWNER	2	2
									0	3	OWNER	2	8
									0	3	OWNER	2	8
								2	0	3	PHOTO	2	8
									0	3	PHOTO	2	8
			30						0	0	MDH	2	2
									0	3	FIELD	2	8
			30						0	0	MDH	2	2
								2	0	3	PHOTO	2	8
								1.5	0	3	PHOTO	2	8
								2.5	0	3	PHOTO	2	8
								1.5	0	3	PHOTO	2	8
			150						1	3	PHOTO	2	8
								2	0	3	PHOTO	2	8
								2	0	3	PHOTO	2	8
								5	0	3	PHOTO	2	8
								2.5	0	3	PHOTO	2	2
									0	3	OWNER	2	2
									0	3	PHOTO	2	8
								2	0	3	PHOTO	2	8
								2.5	0	3	PHOTO	2	8
								1.5	0	3	PHOTO	2	8
			50					1.5	0	3	PHOTO	2	8
								1.5	0	4	PHOTO	3	8
									0	2	PHOTO	2	8
			25					1	0	3	PHOTO	2	8
			96						0	0	MDH	2	2
			60						0	0	MDH	2	2
								4	0	3	PHOTO	2	8
								1.5	0	3	PHOTO	2	8

Unique

Well No. Proj. No. Owner

Location

Phone C. Number

Elev.

Geologic Log

Casing Schedule

C

A

Status Map

Source

80

2

1

3

PHOTO

2

8

0

3

PHOTO

2

8

0

3

PHOTO

2

8

0

2

PHOTO

2

8

140

0

0

MDH

2

2

100

0

0

MDH

2

2

100

0

0

MDH

2

2

100

0

0

MDH

2

2

8

28

0

0

MDH

2

2

100

0

0

MDH

2

2

0

4

NONE

3

8

170

0

0

MDH

2

2

150

0

0

MDH

2

2

175

0

0

MDH

2

2

100

2

0

MDH

2

2

0

0

MDH

2

2

0

0

MDH

2

2

0

0

MDH

2

2

75

0

0

MDH

2

2

100

0

0

MDH

2

2

80

0

0

MDH

2

2

60

0

0

MDH

2

2

45

0

0

MDH

2

2

8

25

0

0

MDH

2

2

25

2

0

MDH

2

2

0

0

MDH

2

2

80

0

0

MDH

2

2

100

0

0

MDH

2

2

100

0

0

MDH

2

2

70

0

0

MDH

2

2

0

0

MDH

2

2

50

0

0

MDH

2

2

120

0

0

MDH

2

2

36

2

0

MDH

2

2

880

0- 69 QUA

2

3

NONE

2

2

9

69- 75 PVL

75- 76 STP

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source							
NON-RESPONSIVE								0	0	MDH	2	2							
								2	0	MDH	2	2							
								2	0	MDH	2	2							
								890	0-	74	QUA	0-	68	3	2	0	MDH	2	2
								0	3	OWNER	2	8							
								0	4	NONE	3	8							
								0	3	OWNER	2	8							
								0	0	NONE	2	8							
								125	0	0	MDH	2	2						
								150	0	0	MDH	2	2						
								140	0	0	MDH	2	2						
								150	0	0	MDH	2	2						
								2	3	OWNER	2	8							
								0-	85	QUA	0-	80	3	2	0	NONE	2	4	
								90	2	0	MDH	2	2						
								2	0	MDH	2	2							
								0	0	MDH	2	2							
								0	0	MDH	2	2							
								0	0	MDH	2	2							
								90	2	0	MDH	2	2						
								100	2	0	MDH	2	2						
								100	2	0	MDH	2	2						
								100	2	0	MDH	2	2						
								160	2	0	MDH	2	2						
								100	2	0	MDH	2	2						
								2	0	MDH	2	2							
								126	STP	0	0	MDH	2	2					
								0	0	MDH	2	2							
								0	0	MDH	2	2							
								150	0	0	MDH	2	2						
								0	0	MDH	2	2							
								STP	2	0	MDH	2	2						

Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Elev.	Geologic Log	Casing Schedule	C	A	Status	Map	Source
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NON-RESPONSIVE

0	3	NONE	2		8
0	3	NONE	2		8
0	3	NONE	2		8
0	3	NONE	2		8
0	0	NONE	2		8
0	4	NONE	3		8
0	4	NONE	3		8
0	0	NONE	2		8
0	3	NONE	2		8
0	4	NONE	3		8
0	4	NONE	3		8
0	4	NONE	3		8
0	4	NONE	3		8
2	4	NONE	3		8
2	4	NONE	3		8
2	4	NONE	3	3	7
0	3	NONE	2		8
0	4	NONE	3		8
0	4	NONE	3		8
0	4	NONE	3		8
1	3	NONE	2		8
0	3	NONE	2		8
0	4	NONE	3		8
0	3	NONE	2		8
0	4	NONE	3		8
0	3	NONE	2		8
0	4	NONE	3		8
0	3	NONE	2		8
0	4	NONE	3		8
0	4	NONE	3		8
0	4	NONE	3		8
0	3	NONE	2		8
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Unique Well No.	Proj. No.	Owner	Location	Phone C Number	Geologic Elev. Log	Casing Schedule	C	A	Status	Map	Source
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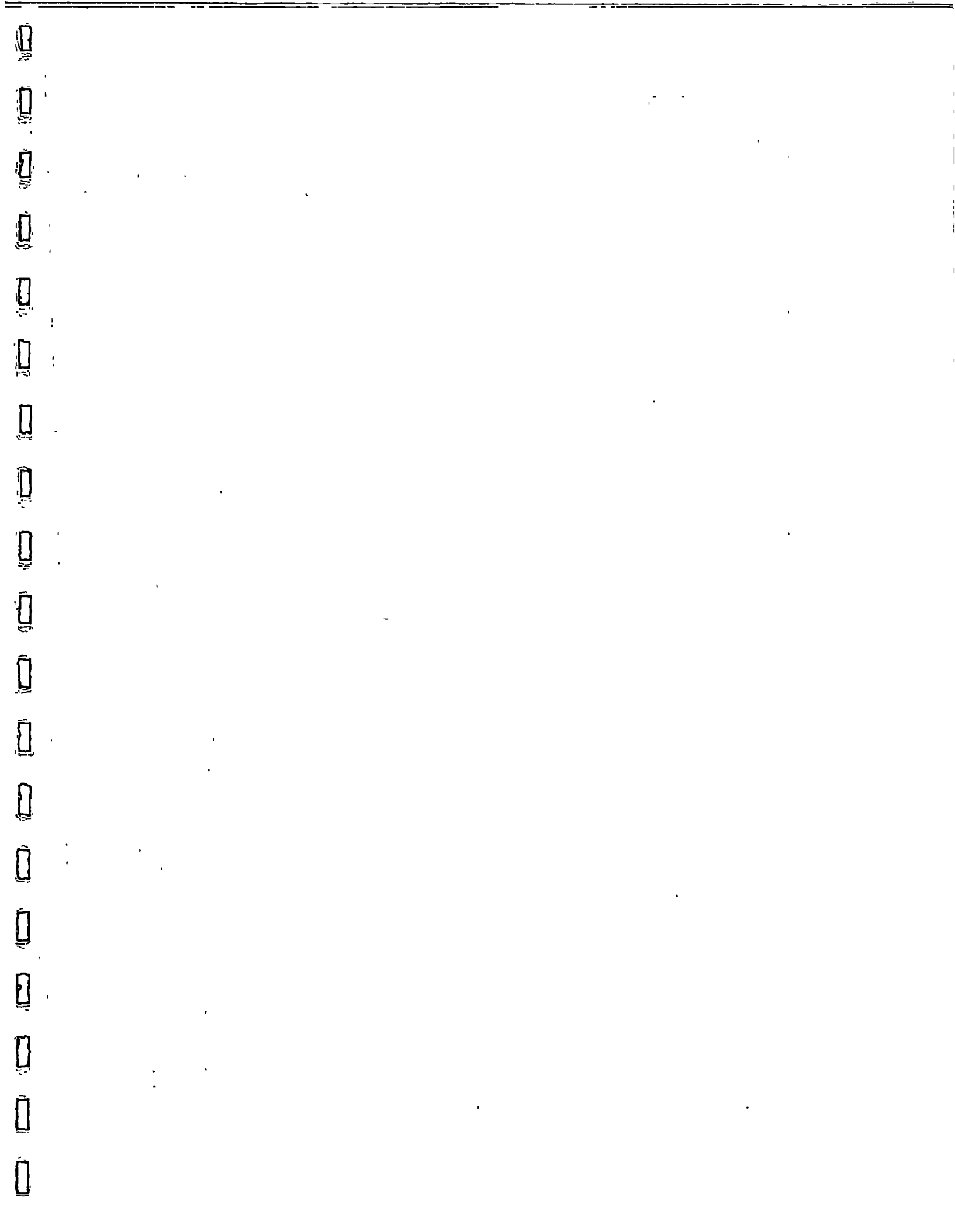
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RESPONSIVE

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UN.NO.	CO	T-R-S	QUAD	ELEV	USE	DPTH	AQU	D2BR	FBRK	LUNT	NO3	DATE	BACT DATE	SMEL DATE	WL	WC	NAME
114472	27	117-21-17DCAC	104A	890	OT	95	OSTP	68	OPVL	OSTP				864 1977	Y		MONITO
147459	27	117-21-18DABB	104B	930	MU	1085	CMTS	115	OSTP	CMTS	0.4	198403		615 1983	Y		ST. LO
149710	27	117-21-17BACB	104A	897	TW	89	OPVL	73	OPVL	OPVL				887 1978	Y		U.S.G.
149711	27	117-21-16CDBB	104A	914	TW	106	OPGW	80	OPGW	OPGW				860 1978	Y		U.S.G.
160018	27	117-21-20A8BA	104A	889	OT	90	OSTP	81	OPVL	OSTP				866 1978	Y		U.S.G.
160030	27	117-21-16DCBB	104A	905	OT	67	QBAA			QBAA				869 1979	Y		U.S.G.
160031	27	117-21-16CDBB	104A	914	OT	72	QMTA			QMTA				869 1979	Y		U.S.G.
165576	27	117-21-16CCAC	104A	920	OT	109	OPVL	96	OPVL	OPVL				876 1979	Y		U.S.G.
165577	27	117-21-218BDA	104A	920	OT	115	QBAA			QBAA				878 1979	Y		U.S.G.
165578	27	117-21-21BADB	104A	920	OT	239	OSTP	120	OSTP	OSTP				885 1979	Y		U.S.G.
165579	27	28-24- 6CADC	104A	882	OT	86	HTPL	71	OPVL	OSTP				852 1979	Y		U. S.
165580	27	117-21-16CDAB	104A	910	OT	103	HTPL	90	OPVL	OGWD				871 1979	Y		U.S.G.
165581	27	28-24- 7BDBB	104A	915	OT	123	OPGW	103	OPGW	OPGW				872 1979	Y		U. S.
165582	27	28-24- 7CDBB	104A	880	OT	90	OPGW	71	OPGW	OPGW				869 197909	Y		U. S.
165583	27	117-21-218BDA	104A	920	TW	67	QBAA			QBAA				873 1979	Y		U.S.G.
165584	27	117-21-218CDD	104A	913	TW	122	OSTP	117	OSTP	OSTP				889 1979	Y		U.S.G.
165585	27	117-21-20AADC	104A	887	TW	88	HTPL	80	OPVL	OSTP				872 1979	Y		U.S.G.
165586	27	117-21-168CCD	104A	919	TW	107	OPVL	94	OPVL	OPVL				884 1979	Y		U.S.G.
165587	27	117-21-218B8C	104A	902	TW	93	OPVL	84	OPVL	OPVL				827 1979	Y		U.S.G.
165588	27	117-21-16CCAA	104A	917	TW	122	OSTP	109	OSTP	OSTP				867 1979	Y		U. S.
165589	27	117-21-16CCAA	104A	917	TW	73	QMTA			QMTA					Y		U. S.
165590	27	117-21-21BADB	104A	920	TW	80	QMTA			QMTA					Y		U.S.G.
165591	27	117-21-168CCD	104A	916	TW	53	QMTA			QMTA				881 1979	Y		U.S.G.
165592	27	117-21-17DCBC	104A	891	TW	87	OPVL	70	OPVL	OPVL				821 1979	Y		U.S.G.
169672	27	28-24- 7	104A		DO	100								D 45 1980			NELSON
190261	27	117-21-20DDC	104A		OT	74								D 15 1985			TARACO
190268	27	117-21-20DDC	104A		OT	71								D 12 1986			NL IND
194660	27	28-24- 7BB	104A		TW	34								D 32 1988			TOSCAN
196590	27	117-21-19			OT	25								D 7 1983			BURCHE
200537	27	28-24- 6AABB	104A	885	DO	83		77	OPVL					870 1922	Y		J NITK
200538	27	28-24- 6BAAA	104A	915	IN	98	HTPL	60	OPVL	OSTP				903 1957	Y		MOONEY
200539	27	28-24- 6BAAB	104A	910	CO	398	HTPL	74	OPVL	CJDN				864 1939	Y		PARK T
200540	27	28-24- 7ACBD	104A	900	DO	113	OPVL	85	OPVL	OPVL				868 1956	Y		MARK C
200541	27	28-24- 7B8CB	104A	915	CO	247	HTPL	99	OPVL	OSTP				868	Y		LILAC
200542	27	28-24- 7BDAD	104A	900	MU	490	HTPL	76	OPVL	CJDN	1.0	197508		815 1946	Y		ST. LO
200543	27	28-24- 7CACD	104A	880	DO	86	OPVL	70	OPVL	OPVL				864 1958	Y		ALFRED
200544	27	28-24- 7CCBA	104A	905	DO	277	HTPL	238	OSTP	OPDC				808 1954	Y		I GERE
200545	27	28-24- 7DDDA	104A	905	CO	497	HTPL	86	OPVL	CJDN				845 1948	Y		WEST G
200962	27	117-21- 8DCDC	104A	925	MU	290	HTPL	104	OPVL	OSTP				865 1959	Y		ST. LO
200979	27	117-21-17CADA	104A	892	IN	950		63	OPVL					832 1908	Y		MINNES
200993	27	117-21-17CAAD	104A	895	IN	91	HTPL	65	OPVL	OSTP				889 1947	Y		REPUBL
201057	27	29-24-31AAAA	104A	865	DO	236	HTPL	170	OSTP	OPDC				850 1952	Y		CARL C
201058	27	29-24-31AACB	104A	875	DO	235		80	OSTP					850 1950	Y		CONRAD
201059	27	29-24-31AADA	104A	885	DO	107	QMTA			QMTA				858 1949	Y		DR. H.
201060	27	29-24-31DADA	104A	871	DO	246	OSTP	108	OSTP	OSTP				829 1949	Y		MAX W
201061	27	29-24-31ABDA	104A	880	DO	247	OSTP	73	OSTP	OSTP				860 1951	Y		COAMES
201062	27	29-24-31ACBA	104A	875	MU	303	HTPL	78	OSTP	OPDC				838 1988	Y		ST. LO
201063	27	29-24-31ADDC	104A	880	DO	292	HTPL	94	OSTP	OPDC				844 1948	Y		MR. MO
201064	27	29-24-318BCB	104A	885	CO	90		60	OPVL					864 1957	Y		DIETEN
201065	27	29-24-318CAA	104A	885	PS	168	HTPL	92	OSTP	OPDC				872 1961	Y		BENILD

UN.NO.	CO	T-R-S	QUAD	ELEV	USE	DPTH	AGU	D2BR	FBRK	LUNT	NO3	DATE	BACT	DATE	SWEL	DATE	WL	WC	NAME
201066	27	29-24-31CADB	104A	890	DO	150		83	OPVL						860	1955	Y		JOHN L
201067	27	29-24-31CADC	104A	890	DO	97	MTPL	75	OPVL	OSTP					870	1951	Y		MR LEN
201068	27	29-24-31CDCD	104A	915	DO	89		79	OPVL						883	1950	Y		L.J. R
203184	27	117-21-7ACCB	104B	930	DO	134	MTPL	105	OPVL	OSTP					885	1959	Y		GLENN
203186	27	117-21-7ADDD	104B	915	DO	133	MTPL	90	OPVL	OSTP					865	1955	Y		H. F.
203187	27	117-21-788AA	104B	920	MU	500	CJDN	105	OPVL	CJDN	1.0	197508			795	1973	Y		ST. LO
203188	27	117-21-7DAAB	104B	930	DO	264	MTPL	91	OPVL	OSTP					890	1955	Y		J. MAN
203189	27	117-21-7DACA	104B	920	DO	117		95	OPVL						885	1951	Y		KARL H
203190	27	117-21-7DDDD	104B	925	CO	466	MTPL	98	OPVL	CJDN					845	1951	Y		TEXA T
203191	27	117-21-18AADC	104B	920	DO	102											Y		JOHN M
203192	27	117-21-188AAA	104B	920		108		100	OPVL						870		Y		DR. H.
203193	27	117-21-188BBD	104B	930	PS	123	OPVL		PITT	OPVL					886	1955	Y		CALVAR
203194	27	117-21-188BDC	104B	925	DO	126	OPVL	100	OPVL	OPVL					885	1952	Y		GERALD
203195	27	117-21-188CAD	104B	915	DO	260		79	OPVL						835	1960	Y		M. HAR
203196	27	117-21-18DABA	104B	930	MU	465	MTPL	109	OPVL	CJDN	1.0	197508			839	1947	Y		ST. LO
203197	27	117-21-19ABCB	104B	915	DO	112	OPVL	86	OPVL	OPVL					903	1951	Y		C. E.
203198	27	117-21-19ABDD	104B	913	MU	475	MTPL	90	OPVL	CJDN	1.	197309			852	1950	Y		HOPKIN
203199	27	117-21-19BABD	104B	920	DO	117	QBAA		QBAA						841	1959	Y		R. C.
203200	27	117-21-19BDAD	104B	920	DO	107	MTPL	81	OPVL	OSTP					902	1962	Y		WALLY
203601	27	117-21-19CABA	104B	915	CO	99	OPVL	93	OPVL	OPVL	2.8	198706	1	1987	906	1952	Y		PITTS
203602	27	117-21-19DDBD	104B	925	DO	136		85	OPVL								Y		J. F.
203603	27	117-21-19DDDD	104B	925	DO	130		100	OPVL						877	1957	Y		
203604	27	117-21-20CCBA	104B	910	DO	102	QBAA		QBAA						880	1969	Y		ALEXAN
203605	27	117-21-20CCBD	104B	905	DO	105		91	OPVL						870	1950	Y		E. B.
204575	27	117-21-19C8DD	104B	921	CO	502	MTPL	93	OPVL	CJDN					851	1946	Y		RED OW
206181	27	29-24-31ABAA	104A	890	DO	185		80	OSTP						860	1946	Y		P. I.
206435	27	117-21-8AABB	104A	910	DO	99		92	OPVL								Y		STANDA
206436	27	117-21-88DDA	104A	905	MU	446	MTPL	75	OPVL	CJDN	1.0	197508			847	1952	Y		ST. LO
206437	27	117-21-88DDB	104A	905	MU	473	MTPL	69	OPSP	CJDN	1.0	197508			835	1956	Y		ST. LO
206438	27	117-21-8CADB	104A	910	CO	394	MTPL	86	OPVL	OPDC					822	1966	Y		MCCOUR
206439	27	117-21-8DCD	104A	925	MU	1093	CMTS	101	OPVL	CMTS	1.0	197508			704	1960	Y		ST. LO
206440	27	117-21-8DCDB	104A	925	MU	286	MTPL	103	OPVL	OSTP	1.0	197508			865	1959	Y		ST. LO
206441	27	117-21-8DCD	104A	926	MU	290	OSTP	104	OPVL	OSTP					866	1959	Y		ST. LO
206442	27	117-21-8DCDC	104A	925	MU	500	MTPL	103	OPVL	CJDN	1.0	197508			821	1955	Y		ST. LO
206443	27	117-21-16CCA	104A	917	OT	540	OPDC	109	OSTP						846		Y		ST. LOU
206444	27	117-21-16CDBC	104A	915	IN	475	MTPL	111	OSTP	CJDN					831	1950	Y		MINNES
206445	27	117-21-16CDAA	104A	905	IN	312	MTPL	92	OPVL	OPDC					821	1963	Y		S + K
206447	27	117-21-20BABB	104B	910	DO	95	QWTA		QWTA						870	1961	Y		SHELDO
206448	27	117-21-17CDCA	104A	895	CO	85	OPVL	79	OPVL	OPVL					886	1950	Y		LAKELA
206449	27	117-21-17DDBD	104A	905	IN	182		80	OPVL						885	1953	Y		ROBINS
206450	27	117-21-20AAAA	104A	900	IN	384	MTPL	72	OPVL	CJDN					835	1958	Y		PAUL S
206451	27	117-21-17DDDD	104A	904	IN	109	MTPL	77	OPVL	OSTP					883	1958	Y		PAUL S
206452	27	117-21-20ADDB	104A	895	OT	60		60	OPVL								Y		METHOO
206454	27	117-21-20BABA	104A	895	IN	335	OPDC	73	OPVL	OPDC					827	1963	Y		FLAME
206455	27	117-21-20BAAB	104A	915	DO	73	OPVL	55	OPVL	OPVL					885	1949	Y		META B
206456	27	117-21-21CDBD	104A	915	MU	1095	CMTS	96	OPVL	CMTS	1.0	197508			670	1965	Y		ST. LO
206457	27	117-21-21CDBD	104A	915	MU	480	MTPL	90	OPVL	CJDN	1.0	197508			838	1948	Y		ST. LO
209344	27	117-21-17CDAA	104A	891	CO	90	OPVL	59	OPVL	OPVL					887	1952	Y		LAKELA
215447	27	117-21-8DCDB	104A	925	MU	503	MTPL	102	OPVL	CJDN	1.0	197508			810	1977	Y		ST. LO
216009	27	117-21-20DACC	104A	890	PS	502	MTPL	74	OPVL	CSTL					835	1935	Y		MEADOW

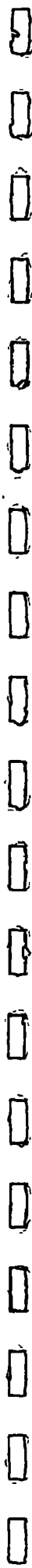
UN.NO.	CO	T-R-S	QUAD	ELEV	USE	DPTH	AQU	D2BR	FBRK	LUNT	NO3	DATE	BACT DATE	SWEL DATE	WL	WC	NAME
216030	27	117-21-17AABC	104A	922	OT	107	OPVL	102	OPVL	OPVL				877 1976	Y		CITY O
216031	27	117-21-17BACB	104A	897	OT	36	QWTA			QWTA				883 1976	Y		CITY O
216032	27	117-21-17BDOB	104A	897	OT	52	QWTA			QWTA				890 1976	Y		CITY O
216033	27	117-21-17CADD	104A	890	OT	26	QWTA			QWTA				882 1976	Y		CITY O
216034	27	117-21-17CACD	104A	892	OT	26	QWTA			QWTA				884 1976	Y		CITY O
216035	27	117-21-17CBDA	104B	925	OT	70	QWTA			QWTA				890 1976	Y		CITY O
216036	27	117-21-17CDDC	104A	892	OT	31	QWTA			QWTA				880 1976	Y		MONITO
216037	27	117-21-17DCAC	104A	890	OT	25	QWTA			QWTA				882 1976	Y		MONITO
216038	27	117-21-20ABDB	104A	891	OT	29	QWTA			QWTA				883 1975	Y		MONITO
216039	27	117-21-17DDBC	104A	897	OT	23	QWTA			QWTA				881 1976	Y		MONITO
216040	27	117-21-17DDAD	104A	919	OT	47	QWTA			QWTA				883 1976	Y		MONITO
216041	27	117-21-17DCBC	104A	890	OT	50	QBAA			QBAA				881 1976	Y		MONITO
216043	27	117-21-17CACD	104A	891	OT	76	QWTA			QWTA				878 1977	Y		CITY O
216044	27	117-21-20ABDB	104A	891	OT	64	QBAA			QBAA				880 1977	Y		MONITO
216045	27	117-21-17DDBC	104A	897	OT	69	QWTA			QWTA				881 1977	Y		MONITO
216046	27	117-21-17DCAC	104A	891	OT	78	OPVL	71	OPVL	OPVL				881 1978	Y		MONITO
216047	27	117-21-17CDDC	104A	892	OT	81	OPVL	72	OPVL	OPVL				881 1978	Y		MONITO
216048	27	117-21-20AABB	104A	893	OT	90	OPVL	75	OPVL	OPVL				876 1978	Y		MONITO
216049	27	117-21-20ABDB	104A	892	OT	92	OSTP	75	ODPL	OSTP				867 1978	Y		MONITO
216050	27	117-21-17CAAD	104A	895	IN	909	MTPL	66	OPGW	CHTS					Y		REPUBL
216051	27	117-21-17DDDD	104A	907	DO	90	OPVL	70	OPVL	OPVL					Y		
216052	27	117-21-17DBCA	104A	903	DO	112	MTPL	80	OPVL	OSTP			873 1953	Y		BILL T	
216053	27	117-21-17CDBA	104A	895	CO				NRCO						Y		
216054	27	117-21-17CCAC	104B	935	OT	200			NRCO						Y		
216055	27	117-21-20BBBC	104B	905	DO				NRCO						Y		
216056	27	117-21-16CBBC	104A	923	IN	342	OPDC	93	OPVL	OPDC			818 1967	Y		STERIL	
216057	27	117-21-16CAAD	104A	912	CO	116	MTPL	84	OPVL	OSTP			865 1989	Y		BURDIC	
216060	27	117-21-16CDBB	104A	914	CO	1002	MTPL	111	OSTP	CHTS			764 1988	Y		C.M.ST	
216065	27	117-21-16CDAB	104A	912	IN	305	MTPL	132	OSTP	OPDC			827 1973	Y		S+K PR	
216066	27	28-24- 6AADB	104A	891	IN	490		72	OPVL						Y		BUDRIC
216067	27	117-21-20ADAC	104A	890	PS	485	MTPL	94	OSTP	CJDN			821 1978	Y		METHOD	
216068	27	117-21-17DCDA	104A	890	CO				NRCO						Y		PRESTO
216069	27	117-21-20BAAA	104A	892	IN				NRCO						Y		ANDROC
216070	27	117-21-20BCAD	104B	920	IN	110	MTPL	81	OPVL	OSTP			890 1961	Y		SUBURB	
216073	27	117-21-20BBAA	104B	919	DO	118	OPVL	99	OPVL	OPVL			883 1959	Y		HAROLD	
216074	27	117-21-17CCBA	104B	935	DO				NRCO						Y		EARLIN
216075	27	117-21-17CCAB	104B	935	PS				NRCO						Y		OAK HI
216076	27	117-21-17BACD	104A	890	DO				NRCO						Y		
216077	27	117-21-17DBBC	104A	899	DO				NRCO				875 1956	Y		SITE E	
216078	27	117-21-17CCAC	104B	935	DO				NRCO						Y		
216079	27	117-21-17DDDD	104A	905	CO	112	MTPL	80	OPVL	OSTP					Y		WILLIA
216081	27	117-21-20ABDB	104A	888	CO	280	MTPL	86	OGWD	OPDC			864 1956	Y		BLACK	
216082	27	117-21-20ABDB	104A	888	CO	105	MTPL	84	OGWD	OSTP			863 1955	Y		BLACK	
216086	27	117-21-19ACDD	104B	915	CO	144	MTPL	87	OPVL	OSTP			893 1952	Y		JASPER	
216109	27	117-21-20ABDC	104A	892	OT	78	MTPL	65	OPVL	OGWD			881 1979	Y		MONITO	
216165	27	117-21-21BBBC	104A	902		80		80	OPVL						Y		P-111
216166	27	117-21-21BBBC	104A	902	OT	51									Y		P-112
216167	27	117-21-21BADB	104A	915	OT	213	OSTP	114	OSTP	OSTP					Y		P-113
216168	27	117-21-21BADB	104A	915	OT	55									Y		P-114
216169	27	28-24- 6CADC	104A	885	OT	92	OSTP	69	OPVL	OSTP					Y		P-116



IN.NO.	CD	T-R-S	QUAD	ELEV	USE	DPH	AQU	D2BR	FBRK	LUNT	NO3	DATE	BACT DATE	SMEL DATE	WL	WC	NAME
443466	27	28-24- 78BA	104A		MW	40								D 35 1989			PARK N
443467	27	28-24- 78BA	104A		MW	48								D 43 1989			PARK N
443468	27	28-24- 78BA	104A		MW	48								D 40 1989			PARK N
443469	27	28-24- 78BA	104A		MW	32											PARK N
443470	27	28-24- 78BA	104A		MW	35											PARK N
443471	27	28-24- 78BA	104A		MW	53								D 41 1989			PARK N
443472	27	28-24- 78BA	104A		MW	33											PARK N
443473	27	28-24- 78BA	104A		MW	20								D 16 1989			PARK N
443474	27	28-24- 78BA	104A		MW	35								D 16 1989			PARK N
443539	27	28-24- 6CDD	104A		MW	40											PERKIN
443540	27	28-24- 6CDD	104A		MW	46								D 35 1989			PERKIN
443541	27	28-24- 6CDD	104A		MW	45								D 35 1989			PERKIN
443542	27	28-24- 6CDD	104A		MW	37								D 29 1989			PERKIN
444206	27	117-21-17AAA	104A		MW	32								D 25 1988			FINA O
444218	27	117-21-17AAA	104A		MW	36								D 27 1988			FINA O
444219	27	117-21-17AAA	104A		MW	36								D 29 1988			FINA O
452990	27	28-24- 78DB	104A		MW	44								D 39 1989			INTER
452991	27	28-24- 78DB	104A		MW	47								D 40 1989			INTER
457108	27	117-21-20	104A		DO	95								D 10			SWANSO
462146	27	117-21- 88AB	104B		DO	120								D 17 1990			HIRT,
462929	27	117-21-17DC	104A		MW	70								D 47 1990			CITY O
462932	27	117-21-16CADD	104A	892	MW	85	QBAA			QHUG				854 199011	Y		ST.LOU
462934	27	117-21-16CADD	104A	923	MW	77	QBAA			QHUG				890 199011	Y		CITY O
469611	27	28-24- 78B	104A		MW	79								D 45 1990			CITY O
469612	27	28-24- 78B	104A		MW	79								D 37 1990			CITY O
469613	27	28-24- 78B	104A		MW	79								D 45 1990			CITY O
472195	27	28-24- 68BD	104A		MW	24								D 14 1991			GASSEN
472196	27	28-24- 68BD	104A		MW	24								D 14 1991			GASSEN
472197	27	28-24- 68BD	104A		MW	23								D 13 1991			GASSEN
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483786	27	28-24- 6AAA	104A		MW	23											AMOCO
483787	27	28-24- 6AAA	104A		MW	26								D 19			AMOCO
483788	27	28-24- 6AAA	104A		MW	23								D 17			AMOCO
483789	27	28-24- 6AAA	104A		MW	27								D 21			AMOCO
486701	27	29-24-31	104A		MW	29											1220 A
486702	27	28-24- 6AAA	104A		MW	20											MINIKA
486703	27	28-24- 6AAA	104A		MW	20											MINIKA
486704	27	28-24- 6AAA	104A		MW	20											MINIKA
486705	27	29-24-31	104A		MW	30											ST. LO
486706	27	29-24-31	104A		MW	29											HENNEP
486707	27	29-24-31	104A		MW	29											HENNEP
W00010	27	117-21- 7DCCA	104B	915	DO	100	OPVL							900 1988			JANOFF
W00013	27	117-21- 8CDDC	104B	930	DO	74	QBAA							885 1988			RAUSCH
W00014	27	117-21- 7DCCC	104B	920	DO	56	QMTA							900 1988			GARBER
W00027	27	117-21- 7ACCC	104B	925	DO	110	OSTP							894 1988			FLEMIN
W00028	27	117-21- 7ADDB	104B	910	DO	64	QMTA							896 1988			SIMMER
W00029	27	28-24- 7BCBB	104A	885	CO	22											BILLMA
W00066	27	117-21- 7ACCC	104B	925	DO	75	QMTA							870 1988			COUSIN
W00069	27	28-24- 7CAAC	104A	920	DO	55	QMTA							895 1988			WOLFR
W00070	27	117-21-16ABBB	104A	900	DO	100	OPVL							845 1988			HOKENS



UN.NO.	CO	T-R-S	QUAD	ELEV	USE	DPH	AQU	D2BR	FBRK	LUNT	NO3	DATE	BACT DATE	\$MEL DATE	WL	WC	NAME
W00071	27	117-21-	9CCDC	104A	910	DO	65	QMTA						885	1988		O'KEEF
W00073	27	117-21-	168DAB	104A	921	DO	85	QMTA						891	1988		WITKOM
W00074	27	117-21-	16CCC8	104A	925	DO	62	QMTA						890	1988		YOUNG
W00075	27	117-21-	188ABA	104B	925	DO								875			SEILER
W00076	27	117-21-	18ABBA	104B	932	DO	90	QMTA						882	1988		SCHAFF
W00077	27	117-21-	18ABBA	104B	932	DO	90	QMTA						882	1988		OVERMA
W00078	27	117-21-	18ABBB	104B	930	DO	82	QMTA						882	1988		ANDERS
W00080	27	117-21-	18ABBB	104B	925	DO	90	QMTA						880	1988		MINER,
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W00085	27	117-21-	7BBAD	104B	925	DO	100	QBAÄ						865	1988		OLSON,
W00087	27	117-21-	8CDD8	104A	905	DO	38	QMTA						890	1988		SHIPPU
W00124	27	117-21-	190DBD	104B	925	DO	90							865	1988		CONNOR
W00173	27	117-21-	17ABCA	104A	925	CO	42	QMTA						909	1988		O&N IN

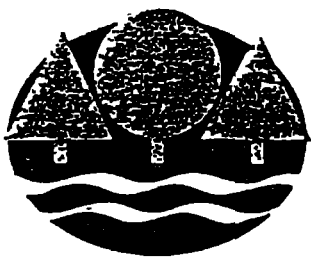


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2

APPENDIX 2

Minnesota Pollution Control Agency Letter to City of St. Louis Park



Minnesota Pollution Control Agency

**CERTIFIED MAIL
RETURN RECEIPT REQUESTED**

DEC 16 1993
City Manager
City of St. Louis Park
5065 Minnetonka Boulevard
St. Louis Park, Minnesota 55416

RECEIVED

DEC 23 1993

**ADMINISTRATION
CITY OF ST. LOUIS PARK**

President
Reilly Industries
1510 Market Square Center
151 North Delaware Street
Indianapolis, Indiana 46204

Dear Gentlemen

RE. United States of America et al. vs. Reilly Tar and Chemical Corporation et al.
File No. CIV 4-80-469

The Minnesota Pollution Control Agency (MPCA) and the U.S. Environmental Protection Agency (EPA) have reviewed the document entitled Work Plan for Investigating Leaking Multi-Aquifer Wells in the St. Peter Aquifer. The following comments and suggested revisions are addressed at specific portions of the document:

Page 6 Figure 2 - The "inferred area of contamination" shown on the figure is not consistent with the extent of contamination in the Drift and Platteville aquifers. Contamination in the Drift Aquifer extends at least as far to the northeast as W136. Contamination in the Platteville extends at least as far to the north as W424 and considerably east of W101. The boundaries of contamination in both aquifers have not been established by recent sampling. Please change the figure to shown a reasonable interpretation of the extent of contamination which extends at least as far as W136 and W424 and east of W101.

Page 11. Well Investigation Plan

1. The Investigation Plan should focus on the actual area of contamination in the Drift-Platteville Aquifer as defined by the latest analytical data.
2. The actual capture zone of the St. Peter Aquifer gradient control well should plotted up based on water levels and the Plan should focus on wells outside the actual capture zone.
3. The Minnesota Geologic Survey's County Well Index should be consulted for information on potential Multi-Aquifer Wells in addition to the Hickok Study

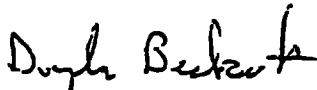
City Manager, City of St. Louis Park
President, Reilly Industries
Page 2

Page 12: Table 1- The list of wells which comprises Table 1 should be updated to include all wells within the actual area of contamination in the Drift and Platteville aquifers. This area of contamination is discussed above.

Page 15: Reporting Requirements - All raw data including well locations, logs, ownership, and status (active/inactive) gathered in the course of the initial screening of wells and additional investigations should be submitted with the report. Well information, analytic data, and geophysical data should be submitted as ASCII files, Lotus 123 spreadsheets or Excel spreadsheets if possible.

Please make the modifications detailed above to the document and resubmit it for the Agency's' approval. If you have any questions or would like to discuss this matter further, please contact either Project Manager.

Sincerely,



Douglas Beckwith
Project Manager
(612) 296-7715
Superfund Unit
Site Response Section
Ground Water and Solid Waste Division
Minnesota Pollution Control Agency



Darryl Owens
Remedial Project Manager
(312) 886-7089
Remedial Enforcement
Response Branch
U.S. Environmental Protection Agency

DB/DO/jlm

B

SECTION B

QUALITY ASSURANCE PROJECT PLAN

QUALITY ASSURANCE PROJECT PLAN

Page: 1 of 10
Date: February 1994
Number: RAP 10.2
Revision: 1

QUALITY ASSURANCE PROJECT
PLAN FOR
INVESTIGATING LEAKING
MULTI-AQUIFER WELLS
IN THE ST. PETER AQUIFER

Prepared by

The City of St. Louis Park
St. Louis Park, MN 55416

Approved by: _____ Date: _____
James N. Grube, Project Manager
City of St. Louis Park, MN

Approved by: _____ Date: _____
Quality Assurance Officer
U.S. EPA Region V

Approved by: _____ Date: _____
Remedial Project Manager
U.S. EPA Region V

QUALITY ASSURANCE PROJECT PLAN

Page: 2 of 10
Date: February 1994
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Revision: 1

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1.2 Quality Objectives	3
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3.3 Document Control and Recordkeeping	7
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5.0 AUDITS AND CORRECTIVE ACTION	10

QUALITY ASSURANCE PROJECT PLAN

Page: 3 of 10
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Revision: 1

1.0 INTRODUCTION

1.1 Background

ENSR Consulting and Engineering (ENSR) and the City of St. Louis Park (City) will complete certain tasks in fulfillment of the Consent Decree and Remedial Action Plan (RAP) for the Reilly Site. This Quality Assurance Project Plan (QAPP) pertains to all work to be performed by ENSR and other contractors who investigate suspected leaking multi-aquifer wells (MAW) affecting the St. Peter Aquifer. Activities to be undertaken during the investigation include: existing record review; measurements of well diameter, static water level, and well depth; caliper logging; spinner logging; natural gamma logging; downhole television logging; and ground water sampling and analysis for Drinking Water Criteria and Phenolics concentration. Further details on the work to be performed, its purpose and the methodology to be employed may be found in the Site Management Plan. This work is scheduled for completion within one year of approval of this Plan pursuant to Section 10.2.1 of the RAP.

1.2 Quality Objectives

The purpose of this QAPP is to define the Quality Assurance and Quality Control (QA/QC) provisions to be implemented to ensure that:

- The data generated will conform to the specifications of the Site Management Plan.
- The work is performed in an efficient manner.
- Field records generated during the course of the field work are complete and accurate.
- The objectives of the Consent Decree are met.

QUALITY ASSURANCE PROJECT PLAN

Page: 4 of 10
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2.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The project organization is illustrated in Figure 2-1. The City is responsible for the completion of the investigation tasks described in this Plan. The City's Project Manager is responsible for overall project management. ENSR will be responsible for the coordination of the field investigation, including field sample retrieval, and Enseco/Rocky Mountain Analytical Laboratory (RMAL), with analytical facilities in Arvada, Colorado, will be responsible for the coordination and completion of all laboratory analyses in accordance with the procedures given in the 1994 Annual Sampling Plan.

The U.S. Environmental Protection Agency (EPA) and the Minnesota Pollution Control Agency (MPCA) are responsible for review and approval of the Sampling Plan, including the QAPP. In addition, laboratory and field audits may be completed by appropriate EPA representatives. The MPCA is responsible for review of field procedures practiced by the Sampling Team. Responsibilities of the key positions in the EPA and MPCA are described below:

- **EPA Project Manager:** The EPA Project Manager, EPA Region V, is responsible for the review and approval of the QAPP on behalf of the EPA.
- **MPCA Project Manager:** The MPCA Project Manager shall be responsible for review and approval of the QAPP on behalf of the MPCA and review of field procedures practiced by the Sampling Team.
- **Minnesota Department of Health (MDH) Project Manager:** The MDH Project Manager shall be responsible for review of information collected on well integrity and construction to determine if wells are within the Minnesota Water Well Construction Code. The MDH Project Manager will also review field procedures practiced by the Sampling Team.

The City's Project Manager shall be responsible to assess the data relative to the quality objectives identified in Section 1.2 of the QAPP.

The Investigation Team shall consist of employees of ENSR. The team shall be responsible for conducting the field investigation, conducting field measurements (i.e., water level), and maintaining proper documentation procedures stated in the QAPP.

The geophysical/drilling contractor will conduct any downhole geophysical testing and/or redrilling of any wells determined to be potential MAWs.

QUALITY ASSURANCE PROJECT PLAN

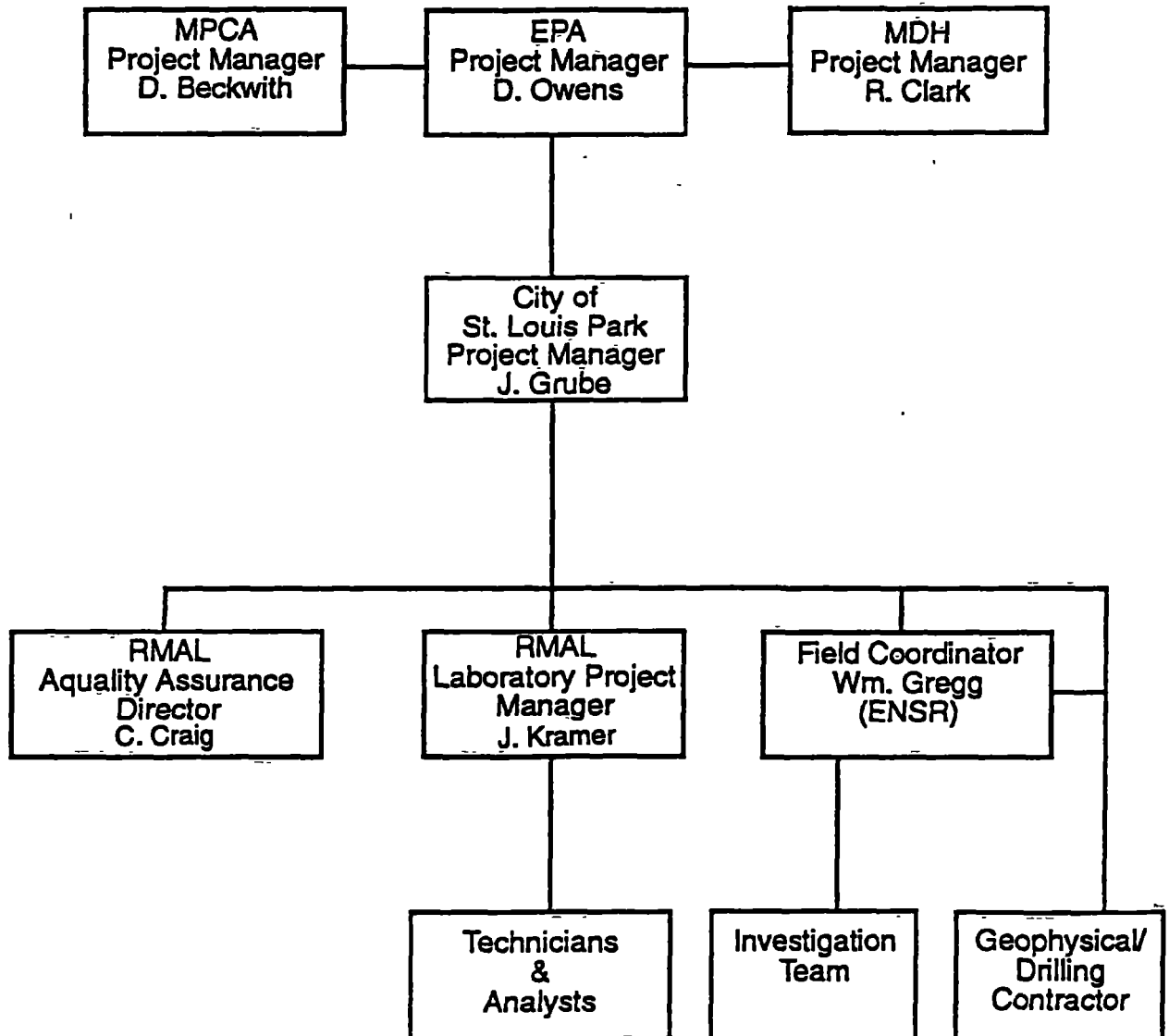
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Revision: 1

Responsibilities of the key positions in the organization of RMAL are described below:

- **Laboratory Project Manager:** The Laboratory Project Manager is ultimately responsible for all laboratories and is the primary point of contact for issues surrounding this QAPP, resolving technical problems, modifications to Standard Operating Procedures (SOP's) etc.
- **Quality Assurance Director:** The Quality Assurance Director is responsible for overall quality control oversight, including internal audits. The Quality Assurance Director supervises an independent QA/QC department and reports directly to the Division Director and Corporate Vice President for Quality Assurance.
- **Analyst:** The Analyst is responsible for the analysis of water samples for the requested parameters utilizing the methods prescribed by the QAPP.
- **Technician:** The Technician is responsible for sample extraction. This requires practical experience and knowledge in the techniques of liquid - liquid solvent extraction, Kuderna - Danish evaporation, and the quantitative preparation of sample extracts for analysis.

QUALITY ASSURANCE PROJECT PLAN

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3.0 QA/QC - FIELD ACTIVITIES

3.1 Training

All field personnel working on the Leaking Multi-Aquifer Well Investigation (including subcontractors) will receive training on the purpose of the work, the procedures to be employed and the project Health and Safety Plan.

3.2 Subcontractor Quality Control

Subcontractor quality control is that system of activities which ensures that products or services obtained from subcontractors fulfill the needs of the project.

Periodic quality control inspection of each contractor will be performed by the ENSR Field Coordinator to evaluate adherence to the project QA Plan and the project Health and Safety Plan. Inspection will include (as appropriate):

- Type and condition of equipment,
- Calibration procedures,
- Personnel qualifications,
- Decontamination procedures,
- Documentation,
- Level of personal protection

Results of the quality control inspection will be entered in the field notebook.

3.3 Document Control and Recordkeeping

Document Control for the remedial investigation serves a two-fold purpose. It is a formal system of activities that ensures that:

1. All participants in the project are promptly informed of revisions of the Quality Assurance Plan; and
2. All critical documents generated during the course of the work are accounted for during, and at the end of the project.

This QAPP and all Standard Operating Procedure documents have the following information on each page:

QUALITY ASSURANCE PROJECT PLAN

Page: 8 of 10
Date: February 1994
Number: RAP 10.2
Revision: 1

- Document number
- Page number
- Total number of pages in document
- Revision number
- Revision date

When any of these documents are revised, the affected pages are reissued to all personnel listed as document holders with updated revision numbers and dates. Issuance of revisions is accompanied by explicit instructions as to which documents or portions of documents have become obsolete.

Control of, and accounting for documents generated during the course of the project is achieved by assigning the responsibility for document issuance and archiving to the ENSR Field Coordinator.

Documentation for the project will either be recorded in non-erasable ink, or will be photocopied promptly upon completion, and the photocopies dated. All documents will be signed by the person completing them.

3.4 Ground Water Sampling Procedures

All ground water sampling and analysis called for in the Site Management Plan will be conducted in accordance with the 1994 Annual Sampling Plan (RAP Section 3.3).

3.5 Final QA/QC Measures

Final QA/QC measures will satisfy local, state, and federal criteria and the objectives of the RAP.

QUALITY ASSURANCE PROJECT PLAN

Page: 9 of 10
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4.0 NUMERICAL ANALYSIS AND PEER REVIEW

All numerical analyses, including manual calculation, mapping, and computer modeling will be documented and subjected to quality control review in accordance with ENSR SOP 1005, Numerical Analysis and Peer Review (Appendix 1). All records of numerical analyses will be legible, reproduction-quality and complete enough to permit logical reconstruction by a qualified individual other than the originator.



5.0 AUDITS AND CORRECTIVE ACTION

ENSR conducts periodic audits to assess the level of adherence to Quality Assurance policies, procedures, and plans.

Whenever quality deficiencies are observed that warrant immediate attention, formal corrective action request forms are issued to the project manager by the Quality Assurance Department. The Quality Assurance Department retains one copy of the form when it is issued. The project manager completes the form and signs it when corrective action has been implemented, and returns the original to the Quality Assurance Officer to close the loop.

ENSR maintains a record of all corrective action requests and reports their status to ENSR management in a quarterly report.

Should an audit be conducted on this project, St. Louis Park will be apprised of the audit findings and of any corrective action that is requested and performed.

APPENDIX 1

**ENSR Standard Operating Procedure 1005:
Numerical Analysis and Peer Review**

Title: Numerical Analysis and Peer Review

1. Purpose and Applicability

This document describes ENSR's procedure for ensuring that all data analyses for site investigations and other studies are correct and consistent with project objectives and are legibly and retrievably documented. The purpose of the documentation is to permit peer review and reconstruction of the logic by which any conclusions were deduced.

2. Responsibilities

The responsibility for implementation of this procedure on each project rests with the person performing the calculations.

The project manager is responsible for ensuring the completeness of project files.

3. Method of Documentation

3.1 Manual Calculations

- 3.1.1 All calculations shall be documented in legible, reproduction-quality records. The records shall be complete enough to permit logical reconstruction by a qualified person other than the originator.
- 3.1.2 Calculations should be maintained in division files during the project, and shall be placed into the central project file at the end of the project.
- 3.1.3 Each calculation should be assigned a unique identification number by an appropriate person. The calculations may be consecutively numbered within a given project. (e.g., D010-1, D010-2,...).
- 3.1.4 Calculations for each project should be kept in a binder with an index sheet.
- 3.1.5 Records of calculations shall contain, on each page, the initials of the originator and reviewer, the date, the project number, calculation number and page number.

STANDARD OPERATING PROCEDURE

Title: Numerical Analysis and Peer Review

Page: 2 of 4
Date: 2nd Qtr. 1989
Number: 1005
Revision: 1

3.1.6 Each calculation shall have a cover page which should contain:

- o client name,
- o project name and number,
- o calculation name and number,
- o total number of pages in the calculation,
- o date,
- o originator's signature.

3.1.7 The complete record of any series of calculations for a project shall have a cover page containing at least the following:

- o Statement of purpose
- o Brief description of method
- o Assumptions and justifications
- o Reference to input data sources
- o All numerical calculations, showing all units
- o Results
- o Reference to associated computer output
- o Signature of originator and date

3.2 Computer Programs

Documentation and qualification procedures for ENSR-written computer programs are detailed in ENSR SOP 1006. Each revision of each program is documented in an annotated hard copy of the software. Annotations should be sufficient to permit a qualified individual other than the originator to understand how the program works. Minimum contents of such a record are:

- o Program name
- o Originator's name
- o Input parameters
- o Date of printout
- o Revision number
- o Each page should be numbered, and should indicate the total number of pages in the record

These records are archived along with the qualification records in a central file.



3.3 Computer Program Output

3.3.1 All final computer program output used in a given project will be retained in hard copy in the project files. The output should be bound and assigned a unique reference number.

3.3.2 Each program output record shall contain at least the following:

- o Name and revision date of program or model used
- o Input parameters
- o Name of user
- o Date of run

3.4 Drawings

3.4.1 All drawings shall be labeled with a unique identification number, which might consist of the project number and a sequential drawing number (e.g. D010-1, D010-2,...).

3.4.2 All drawings shall be constructed using standardized symbols and nationally-recognized drafting standards

3.4.3 All drawings shall be signed and dated by the originator and checked, signed and dated by a reviewer.

3.4.4 All drawings to be published must be approved for issue by the project manager or his designee.

4. Method for Review and Revision

4.1 All calculations and drawings for each project shall be verified by a qualified person other than the originator.

4.2 Verification shall consist of a thorough check of the calculations for the following elements:

- o Appropriateness of method,
- o Appropriateness of assumptions,
- o Correctness of calculations,
- o Completeness of references,
- o Completeness of record.
- o Correctness of input parameters for calculations using computer programs.

STANDARD OPERATING PROCEDURE

Page: 4 of 4

Date: 2nd Qtr. 1989

Number: 1005

Revision: 1

Title: Numerical Analysis and Peer Review

- 4.3 Method of Review - It is the responsibility of the reviewer to assure that the methodology used and results obtained are correct. This may require verification of each number in the calculation, but this is usually not necessary. Typically, spot checks of the computations and visual inspection for the reasonableness constitute a sufficiently thorough check.

In some cases, it may be appropriate and economically feasible for the reviewer to perform a complete, independent calculation using a different, but appropriate method.

It is up to the reviewer to determine the appropriate method of review.

- 4.4 If the reviewer recommends revisions, the reviewer and originator will confer until any disagreements are resolved.
- 4.5 After determining that the calculation is acceptable, the reviewer will sign and date the cover page and initial and date the remaining pages.
- 4.6 A photocopy of the approved calculation record is made and filed in the central project file.

C



C

SECTION C
HEALTH AND SAFETY PLAN

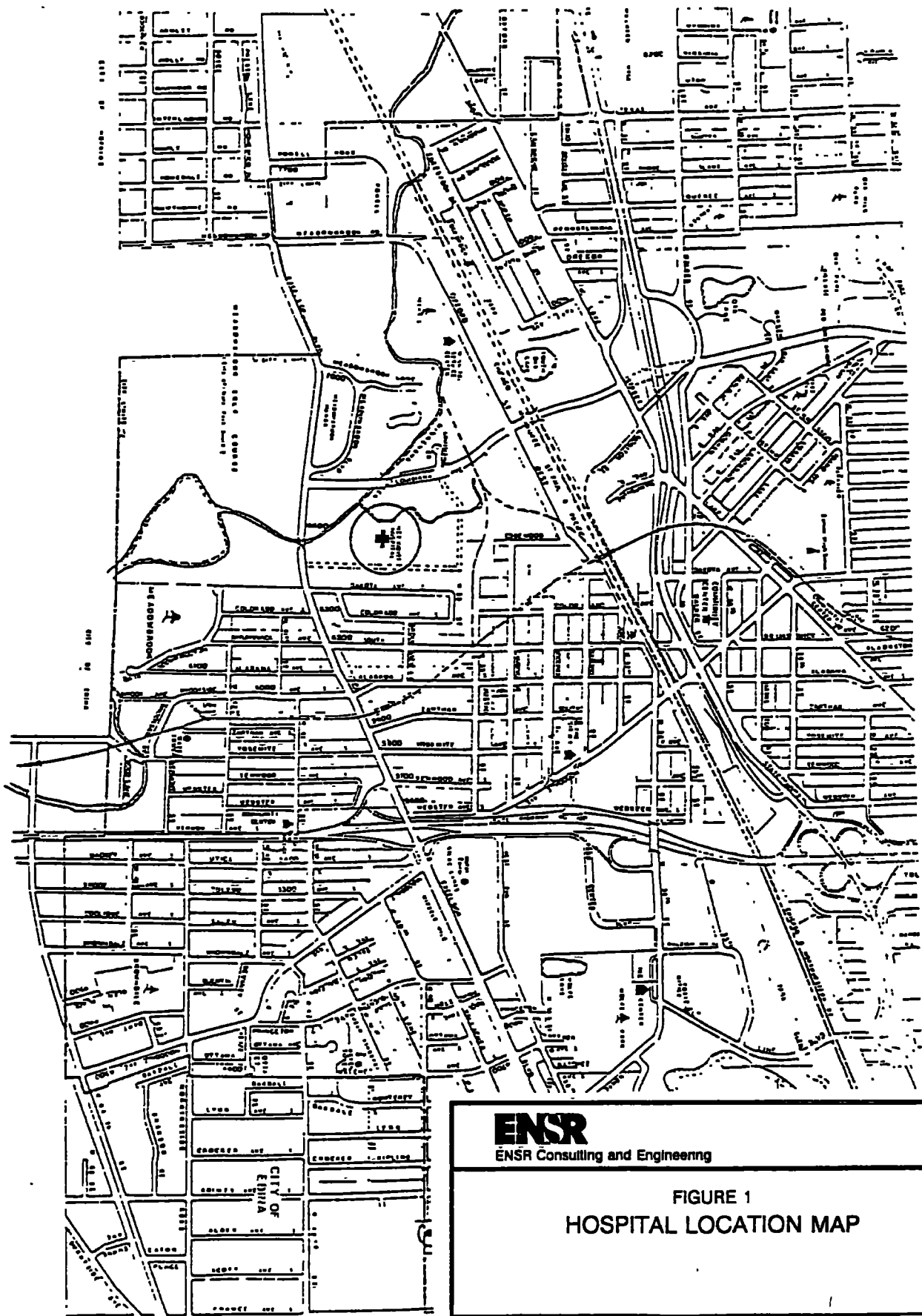
HEALTH AND SAFETY PLAN

Because the field work for this project involves only limited field work, there is no specific Health and Safety Plan for investigating multi-aquifer wells. However, as in all work that may involve heavy machinery such as pump trucks or drilling rigs, common sense safety rules apply. Hard hats will be worn in the vicinity of heavy machinery, and ear, eye, foot and hand protection should be worn, if needed. The Health and Safety Plan that is included in the 1994 Sampling Plan will apply to field work associated with any ground water sampling activities for this project.

If a worker is injured, first aid procedures will be followed and, if necessary, emergency medical attention will be sought. The names and numbers for emergency services are provided below:

Fire Department	911
Ambulance	911
Police Department	911
Methodist Hospital	932-5000

Methodist Hospital is located at 6500 Excelsior Boulevard in St. Louis Park (see attached map).



ENSR

ENSR Consulting and Engineering

FIGURE 1
HOSPITAL LOCATION MAP

DRAWN DWJ	DATE December 21, 1993	PROJECT NO. 1620013500	REV 0
FILE NO	CHECKED WMG		



D



D



SECTION D

COMMUNITY RELATIONS PLAN

COMMUNITY RELATIONS PLAN

The investigation Plan for Multi-Aquifer Wells is to be completed in accordance with the Consent Decree - Remedial Action Plan for the Reilly N.L.P. Site in St. Louis Park, Minnesota. All community relations programs related to this work will be coordinated through the following agencies:

United States Ms. Judy Beck
United States Environmental Protection Agency
(312) 353-1325

State of Minnesota Ms. Susan Brustman
Minnesota Pollution Control Agency
(612) 296-7769

City of St. Louis Park Mr. James N. Grube
City of St. Louis Park
(612) 924-2551

Information necessary to conduct the Community Relations Plan will be provided by the City and Reilly.



ENSR Consulting and Engineering

Alabama	Florence	(205) 740-8240
Alaska	Anchorage	(907) 276-4302
California	Los Angeles	
	Camarillo	(805) 388-3775
	Newport Beach	(714) 476-0321
	San Francisco	(415) 865-1888
Colorado	Fort Collins	(303) 493-8878
Connecticut	Hartford	(203) 657-8910
Illinois	Chicago	(708) 887-1700
Massachusetts	Boston	(508) 635-9500
Minnesota	Minneapolis	(612) 924-0117
New Jersey	Mahwah	(201) 818-0900
	New Brunswick	(908) 560-7323
Pennsylvania	Pittsburgh	(412) 261-2910
South Carolina	Rock Hill	(803) 329-9690
Texas	Dallas	(214) 960-6855
	Houston	(713) 520-9900
Washington	Seattle	(206) 881-7700
Puerto Rico	San Juan	(809) 769-9509



US EPA RECORDS CENTER REG 45



513948

March 15, 1999

**ENSR Consulting
and Engineering**

4500 Park Glen Road
Suite 210
St. Louis Park, MN 55416
(612) 924-0117

Darryl Owens
Regional Administrator
United States Environmental
Protection Agency, Region 5
Mail Code HSR-6J
77 West Jackson Boulevard
Chicago, Illinois 60604

Site Remediation Section (612) 924-0317/FAX
Director, Groundwater and Solid
Waste Division
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, Minnesota 55155

President
Reilly Industries, Inc.
300 North Meridian Street, Suite 1500
Indianapolis, Indiana 46204-1763

**Re: United States of America, et al. vs. Reilly Tar & Chemical
Corporation, et al.
File No. Civ. 4-80-469
Consent Decree – Park K**

Gentlemen:

Enclosed is the 1998 Annual Progress Report submitted pursuant to Park K of the Consent Decree in the above captioned matter. This report is issued by the City in accordance with Section 2(a) of the Reilly/St. Louis Park Agreement (Exhibit B to the Consent Decree).

Any questions regarding this submittal can be directed towards this office.

Sincerely,

William M. Gregg
Project Leader for the
City of St. Louis Park

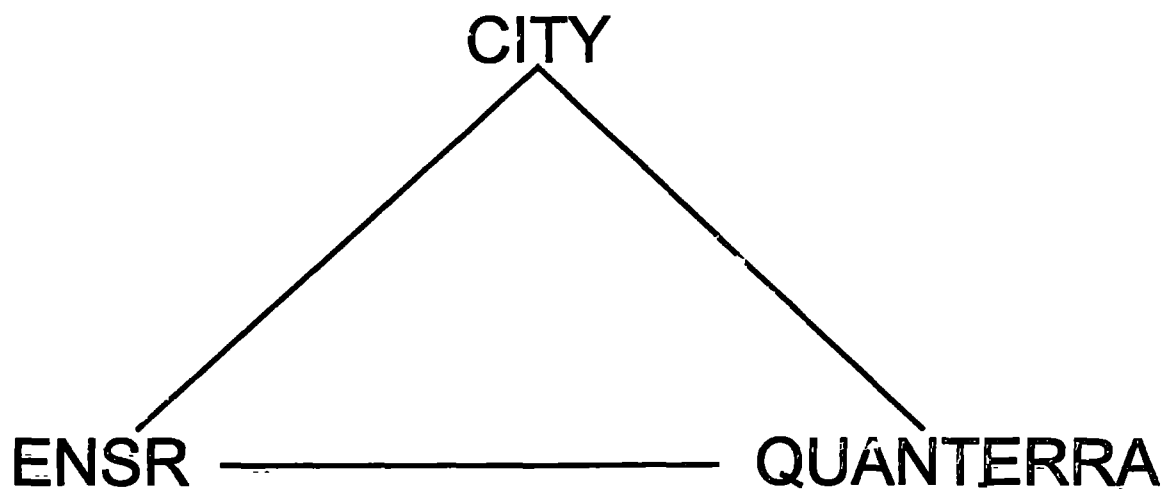
Enclosure

cc: Scott Anderson
Mike Rardin (w/o enclosures)
Reilly File

ANNUAL PROGRESS REPORT
FOR 1998

REILLY TAR & CHEMICAL CORP.
N.P.L. SITE
ST. LOUIS PARK, MINNESOTA

SUBMITTED MARCH 15, 1999



**1998 ANNUAL PROGRESS REPORT
ON THE
IMPLEMENTATION OF THE CONSENT DECREE**

SUBMITTED TO THE

**REGIONAL ADMINISTRATOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V**

**EXECUTIVE DIRECTOR
MINNESOTA POLLUTION CONTROL AGENCY**

BY

THE CITY OF ST. LOUIS PARK, MINNESOTA

**PURSUANT TO
CONSENT DECREE - PART K**

UNITED STATES OF AMERICA, ET AL.

VS.

REILLY TAR & CHEMICAL CORPORATION, ET AL.

**UNITED STATES DISTRICT COURT
DISTRICT OF MINNESOTA
CIVIL NO. 4-80-469**

MARCH 15, 1999

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1. INTRODUCTION

The Consent Decree in United States of America, et al. vs. Reilly Tar & Chemical Corporation, et al. (U.S. District Court, Minnesota, Civil No. 4-80-469) was signed by Judge Magnuson on September 3, 1986, and entered by the Court on the following day. The effective date of the Consent Decree is therefore September 4, 1986 (see Part EE of the Consent Decree).

The Consent Decree requires various actions to be taken by Reilly Industries, Inc. (Reilly), the City of St. Louis Park (City), the United States Environmental Protection Agency (USEPA), the Minnesota Pollution Control Agency (MPCA), and/or the Minnesota Department of Health (MDH). These actions are required by the Consent Decree itself, by the Remedial Action Plan (CD-RAP) (Exhibit A to, and an integral and enforceable part of the Consent Decree, per Part F thereof), or by an Agreement between Reilly and the City (Reilly/City Agreement) (Exhibit B to, and an integral and enforceable part of the Consent Decree, per Part Q thereof, as to the rights and responsibilities between Reilly and the City).

This Annual Progress Report (Report) submitted in accordance with the requirements of Part K of the Consent Decree describes actions taken to implement the requirements of the Consent Decree from January 1 through December 31, 1998. This Report also describes activities scheduled for calendar year 1999, as required by Part K. Two other annual reports are required and are submitted by March 15 of each year under separate cover. The Annual Monitoring Report presents all chemical analyses and water level measurements for that calendar year that are not presented in other reports. The second annual report is the Annual Performance Report for granular activated carbon treatment system. This report discusses chemical analyses and pumping requirements for SLP10 or SLP15 and chemical analyses for SLP4.

As an aid to the reader in following the progress of the many activities involved, this Report provides separate descriptions of completed and scheduled activities required by the Consent Decree (Sections 2.0 and 3.0, respectively) and by the CD-RAP (Sections 4.0 and 5.0, respectively). Within each section, areas of activity are discussed in the order in which they are discussed in the Consent Decree and CD-RAP.

2. COMPLETED CONSENT DECREE ACTIVITIES

Part K of the Consent Decree requires that Reilly submit annual progress reports to the USEPA and MPCA by March 15, which describe actions taken to implement the requirements of the Consent Decree during the previous year and describe activities scheduled for the year in which the report is released. The City, on behalf of Reilly, submitted the 1997 Annual Progress Report on March 15, 1998, pursuant to the requirements of Part K, of the Consent Decree.

Part O of the Consent Decree states that Reilly, the City, the USEPA, or the MPCA may change its designated Project Leader and alternate by notifying the other Parties, in writing, of the change. No changes were made in 1998.

Part Y of the Consent Decree requires Reilly to provide the USEPA and MPCA with current certification of insurance for certain specified coverages. Reilly wrote the USEPA and MPCA on July 7, 1987, to request that the excuse granted to Reilly on October 7, 1986, from meeting certain notification requirements for insurance cancellation be extended to July 1, 1988. The USEPA and MPCA approved this request on September 9, 1987. On March 28, 1991, Reilly submitted certificates of insurance for liability coverage, indicating excess coverage was in place. Reilly submitted information in partial compliance with Part Y and informed the Agencies that reasons necessitating an excuse continued to be valid, thereby causing it to request further extension of the excuse (relating to the language of the insurance certificates). As of December 31, 1998, no response had been received from the Agencies.

Part Z of the Consent Decree requires Reilly to deliver to the United States and State of Minnesota by May 31 of each year, a certificate prepared by Reilly's certified public accounting firm which sets forth whether Reilly's consolidated performance is in accord with the requirements established in the Consent Decree. On March 31, 1998, Reilly submitted a certificate prepared by Reilly's certified public accounting firm which sets forth whether Reilly's consolidated performance is in accord with the requirements established in the Consent Decree. Included therewith was a copy of Reilly's Resource Conservation and Recovery Act (RCRA) Financial Responsibility Assurance filing which the USEPA Region 5's RCRA office required under 40 CFR Section 264.143(f)(3). As of December 31, 1998, no response had been received from the Agencies.

3. SCHEDULED CONSENT DECREE ACTIVITIES

Part P of the Consent Decree addresses the issue of securing access agreements to conduct the various activities contemplated in the CD-RAP. In the past, the City has commenced negotiations with various parties from whom access authorization must be attained based upon the content of Agency correspondence dated May 3, 1989. Said correspondence approved a revision in access agreement language for certain properties owned by the Minneapolis Parks and Recreation Board; however, the Agencies indicated they would review each agreement on a case-by-case basis. Accordingly, individual negotiations will be initiated with each affected property owner whereon the City must perform Consent Decree related activities in 1999 in an effort to secure similar agreements to those which were approved by the Agencies on May 3, 1989. No additional access agreements were made during 1998.

Part Q of the Consent Decree acknowledges the Reilly/City Agreement as Exhibit B to, and an enforceable part of the Consent Decree. Section 2 of the Reilly/City Agreement provides that by September 3, 1990, if necessary to avoid sanitary sewer charges on the discharge from wells W23, the Drift-Platteville Aquifer source control wells and gradient control well, Reilly shall plan, obtain necessary permits for, and construct a treatment facility and piping to allow effluent from the wells to be discharged to a storm sewer. As noted in Section 2 of the 1991 Annual Progress Report, a treatment facility was made operational in 1991, treating water discharged from wells W23, and the Drift-Platteville Aquifer source control wells (W420 and W421). To date, no decision has been made on the disposition of the discharge from Drift-Platteville Aquifer gradient control wells (W422, W434 and W439), or the St. Peter Aquifer gradient control well (W410).

Section 9 of the Reilly/City Agreement provides for the payment by one party of costs incurred by the other party or the sharing by the parties thereto of costs incurred by one party in the implementation of the CD-RAP. Within 30 days of the close of the calendar quarter, in which the costs were incurred, the party incurring the costs shall issue a detailed statement of costs, including supporting documentation, and within 30 days of receipt of such notice, the owing party shall pay to the other its share of the costs. It is anticipated the parties will respond to said submittals in accordance with the provisions stated herein.

Part T of the Consent Decree addresses compliance with all applicable local, state, and federal laws and regulations when implementing the Consent Decree. Among its provisions is the requirement that the USEPA and MPCA approve any facility used for off-site disposal of hazardous substances generated during work undertaken pursuant to the Consent Decree. If either Reilly or the City propose to use a facility in 1999, the Agencies must confirm the status of

the facility before the shipment of hazardous wastes commences.

Part Y of the Consent Decree requires Reilly to provide the USEPA and MPCA with current certification of insurance for certain specified coverages. Appropriate documentation is due in 1999.

Part Z of the Consent Decree requires Reilly to deliver to the United States and State of Minnesota by May 31, 1999, a certificate prepared by Reilly's certified public accounting firm which sets forth whether Reilly's consolidated performance is in accord with the requirements set forth in the Consent Decree.

4. COMPLETED REMEDIAL ACTION PLAN ACTIVITIES

Progress continued in the implementation of the CD-RAP during 1998. Operation of source/gradient control wells occurred throughout the year, impacting flows in the Prairie du Chien-Jordan Aquifer (W23, SLP4 and SLP10/15), St. Peter Aquifer (W410) and the Drift-Platteville Aquifer (W420, W421, W422, W434, and W439). In addition, monitoring of the Mt. Simon-Hinckley, Ironton-Galesville, Prairie du Chien-Jordan, St. Peter, and Drift-Platteville Aquifers was completed. Table 4-1 summarizes the progress made in completing the many activities contemplated in the CD-RAP. Further details on the various CD-RAP activities are provided below.

4.1 CD-RAP Section 3

Section 3.3 of the CD-RAP requires Reilly to submit annual Sampling Plans to the USEPA and MPCA by October 31 of that year for the following year. Section 2(a) of the Reilly/City Agreement provides that the City assume all of Reilly's obligations under Section 3 of the CD-RAP. In correspondence dated November 2, 1998 (the Monday after October 31, 1998), the City indicated that monitoring and sampling in 1999 will follow the 1998 Sampling Plan. There were no modifications or changes required for monitoring and sampling from 1998 to 1999. As of December 31, 1998, no response had been received from the Agencies regarding the 1999 Sampling Plan.

Section 3.4 of the CD-RAP requires Reilly to submit an Annual Monitoring Report to the USEPA and MPCA containing the results of all monitoring during the previous calendar year. The City submitted the 1997 Annual Report on behalf of Reilly on March 15, 1998. In a letter from the Agencies dated November 23, 1998, the Agencies approved the Annual Monitoring Report for 1997.

4.2 CD-RAP Section 4

The City operated the granular activated carbon (GAC) treatment system in complete compliance with Section 4.2 of the Remedial Action Plan (RAP) during 1998. A summary of the 1998 monthly pumpage is presented on Table 4-2.

Municipal wells SLP10/15 pumped without incident during 1998. The wells are required to pump at a minimum of 10 million gallons per month. SLP10/15 pumped a total of 337.6 million gallons for 1998 or approximately 170% of the CD-RAP required minimum annual pumping rate of 200

TABLE 4-1
Status of Remedial Action Plan Activities - 1998

RAP Section	Item	Activities
3.2./3.3	1998 Annual Sampling Plan	Plan submitted by the City on October 30, 1997. No comment has been received from the Agency.
3.2./3.3	1999 Annual Sampling Plan	Plan submitted by the City on November 2, 1998. Agency approval pending.
3.4.	1997 Annual Monitoring Report	Report submitted by the City on March 15, 1998. Agency approved report as indicated in a letter dated November 23, 1998.
4.2	Operation of SLP10/15 and GAC System Operation	The City operated the GAC system in complete compliance. Wells pumped the required monthly volume and yearly volume.
4.3	GAC System Monitoring	Samples collected as outlined in the Sampling Plan
4.3.5	1997 GAC Annual Report	Report submitted by the City on March 15, 1998. Agency approval pending.
5.1	Mt.-Simon Hinckley Monitoring	Completed as outlined in the Sampling Plan.
6.1.4	W105 Monitoring	Sampled this year and even numbered years (i.e. 2000, 2002)
7.1.3	Operation of W23	Pump operated at a monthly average rate of 49 gpm.
7.2.7	Operation of SLP4	Operated well SLP4 within the requirements of the RAP
7.3	Prairie du Chien-Jordan Aquifer Monitoring	Completed as outlined in the Sampling Plan.
7.4.2	Gradient control system modifications in the Prairie du Chien-Jordan Aquifer	The Agencies requested in a letter dated May 4, 1998 that a feasibility study be conducted on three identified scenarios to complete additional capture in the Prairie du Chien-Jordan Aquifer. The City and Agencies acknowledged, in a letter dated November 23, 1998 from the Agencies, that a feasibility study will be conducted once a decision is made on cleanup criteria.

TABLE 4-1
Status of Remedial Action Plan Activities - 1998

RAP Section	Item	Activities
8.1.3	St. Peter Aquifer monitoring	Completed as outlined in Sampling Plan.
8.3	Operation of W410	Pumping during 1998 occurred without incident.
9.1.3	Operation/monitoring of Drift-Platteville Aquifer source control wells, W420 and W421	Pumping during 1998 occurred without incident. Quarterly monitoring completed.
9.2.3	Operation/monitoring of Drift-Platteville Aquifer gradient control well, W422	Pumping during 1998 occurred without incident. Quarterly monitoring completed.
9.3.3	Drift-Platteville Aquifer monitoring	Completed as outlined in Sampling Plan.
9.5.1	Operation of W439	Pumping occurred without incident. Quarterly monitoring completed.
9.6	Drift-Platteville Aquifer Monitoring	Completed as outlined in Sampling Plan.
9.7.2	Platteville Aquifer Gradient control Well W434	Well W434 has pumped without incident since the well was activated on June 10, 1997. Sampling was completed in accordance with the 1998 Sampling Plan.
11.5.1	Development of the site	No activity occurred in 1998.
12.1.1	Exceedance of advisory levels	No active municipal wells exceeded advisory levels.

TABLE 4-2**SLP 10/15 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	35,900,000	804.2
February	11,700,000	290.2
March	19,600,000	439.1
April	21,500,000	497.7
May	27,900,000	625.0
June	17,600,000	407.4
July	37,200,000	833.3
August	36,300,000	813.2
September	34,200,000	791.7
October	26,200,000	586.9
November	31,800,000	736.1
December	37,700,000	844.5
TOTAL	337,600,000	639.1

million gallons per year.

Insofar as Section 4.3.5 of the CD-RAP requires that an annual report of the results of all GAC system monitoring completed in 1998 be reported by March 15, 1999, the City will forward a copy of said report to the USEPA, MPCA, MDH, and Reilly under separate cover by the required date.

4.3 CD-RAP Section 5

Section 5.1 of the CD-RAP requires Reilly to monitor the City's Mt. Simon-Hinckley Aquifer wells on an annual basis. Section 2(a) of the Reilly/City Agreement provides that the City complete this task on behalf of Reilly. The City completed the Mt. Simon-Hinckley Aquifer monitoring in compliance with Section 5.1 of the CD-RAP, and the results have been presented in an annual report issued in accordance with Section 3.4 of the CD-RAP.

4.4 CD-RAP Section 6

Section 6.1.3 of the CD-RAP requires Reilly to pump well W105 at a monthly average rate of 25 gallons per minute (gpm) until such time as the well's discharge is in compliance with cessation criteria contained in Section 6.1.5. On December 4, 1991, the Agencies authorized the City to discontinue the pumping of well W105, and on December 13, 1991, the well was shut down.

Section 6.1.5 of the CD-RAP requires Reilly to monitor well W105 on an every other year basis (i.e. even numbered years). Section 2(a) of the Reilly/Tar Agreement provides that the City complete this task on behalf of Reilly. The City completed the monitoring in accordance with Section 6.1.5 of the CD-RAP in 1998, and will do so again in 2000. No monitoring is required for well W105 in 1999.

4.5 CD-RAP Section 7

Section 7.1.3 of the CD-RAP requires Reilly to pump W23 at a monthly average rate of 50 gpm. Section 2(a) of the Reilly/City Agreement provides that the City operate W23 beginning the day pumping is started. A summary of the 1998 monthly pumpage is presented on Table 4-3. The monthly average flow rate ranged from 41.5 gpm (September) to 51.6 gpm (November) with a monthly average of 49 gpm.

Section 7.2.7 of the CD-RAP requires Reilly to pump SLP4 at its capacity (900 gallons per minute or as near as practicable) during the months of January through April and October through December and 300 gpm from May through September during each calendar year. Section 2(a) of the Reilly/City Agreement provides that the City assume this obligation for Reilly. A summary of

TABLE 4-3**W23 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	2,253,070	50.5
February	1,977,560	49.0
March	2,266,270	50.8
April	2,161,910	50.0
May	2,146,650	48.1
June	2,054,162	47.6
July	2,205,520	49.4
August	2,229,460	49.9
September	1,793,150	41.5
October	2,217,190	49.7
November	2,231,170	51.6
December	2,116,950	47.4
TOTAL	25,653,062	48.8

the 1998 monthly pumpage is presented on Table 4-4. The City achieved the monthly average pumping rate requirements. The City pumped SLP4 at an average rate of 775.4 gpm from October through April and 953.7 gpm from May through September.

Section 7.3 of the CD-RAP requires Reilly to monitor the Prairie du Chien-Jordan Aquifer as specified in Section 3 of the CD-RAP. Section 2(a) of the Reilly/City Agreement provides that the City will assume this obligation for Reilly. The City in compliance with Sections 3 and 7.3 of the CD-RAP completed monitoring of the aquifer, and information relative to the monitoring can be found in the 1998 Annual Report submitted pursuant to Section 3.4 of the CD-RAP.

Section 7.4.2 of the CD-RAP authorizes the Agencies to assess the effect of the diminution of the pump stress placed on the Prairie du Chien-Jordan Aquifer (OPCJ) if the pumping rate of W48 is changed.

In 1995, ENSR submitted a plan for gradient control system modification for the OPCJ, which was approved by the Agencies on October 27, 1995. This approval letter indicated that a mutually acceptable modeling tool developed by Hennepin Conservation District would be used to further evaluate groundwater flow in the OPCJ. Based upon the results from the modeling work, the Agencies indicated in a May 4, 1998, letter the need for additional capture in the OPCJ southeast of the Reilly Site. In the May 4, 1998, letter, the Agencies requested that a feasibility study be completed. The feasibility study should evaluate three possible scenarios to complete this additional capture in this area of the aquifer. These three scenarios are:

- Reestablish pumping at the Methodist Hospital Well (W48)
- Install another well in the general vicinity of W48
- Establish full time pumping at SLP6

In a May 19, 1998, letter from the City to the Agencies, the City indicated that they would complete the feasibility study within a 90-day time frame. However, to effectively evaluate the three scenarios, an agreement on alternate water quality criteria in the OPCJ should be made. These criteria will affect the costs and options for managing the groundwater pumped under the three scenarios. Therefore, the City will complete the feasibility study within the required time period once the alternative water quality is decided.

In a letter from the Agencies dated November 23, 1998, the Agencies acknowledged that the City would prepare a feasibility study after a decision is made by the parties on the new cleanup criteria for the OPCJ.

Several meetings were held during 1998 between the City and the Agencies. One of the

TABLE 4-4**SLP4 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	42,317,000	948.0
February	19,915,000	493.9
March	24,964,000	559.2
April	23,324,000	539.9
May	40,854,000	915.2
June	41,775,000	967.0
July	43,693,000	978.8
August	38,873,000	870.8
September	44,787,000	1036.7
October	43,057,000	964.5
November	41,635,000	963.8
December	42,779,000	958.3
TOTAL	447,973,000	849.7

purposes of the meetings was to discuss replacing CD-RAP criteria with Health Risk Limits and Maximum Contaminant Levels for specific PAH. Discussions regarding CD-RAP changes are planned for 1999.

4.6 CD-RAP Section 8

Section 8.3 of the CD-RAP authorizes the USEPA and MPCA to require Reilly to install and operate a gradient control well system for the purpose of preventing the further spread of groundwater exceeding any of the Drinking Water Criteria defined in CD-RAP Section 2.2 in the St. Peter Aquifer. Section 2(a) of the Reilly/City Agreement provides that the City complete this task on behalf of Reilly.

In response to April 1, 1991, correspondence from the Agencies on the issue, the City placed W410 in service on May 30, 1991. A summary of the 1998 pumpages is presented in Table 4-5.

A review of the summary indicates W410 was pumped within the parameters proposed by the City (65-100 gpm), with an average yearly rate of 72.3 gpm.

Monitoring of St. Peter Aquifer monitor wells occurred in accordance with the provisions of the 1998 Sampling Plan. A report of the results and the effectiveness of well W410 as a gradient control well can be found in the 1998 Annual Report issued pursuant to Section 3.4 of the CD-RAP.

4.7 CD-RAP Section 9

Section 9.1.3 of the CD-RAP requires Reilly to operate the Drift-Platteville Aquifer source control wells at a monthly rate of 25 gpm and monitor them on a quarterly basis. Section 2(a) of the Reilly/City Agreement provides that the City operate the wells beginning the day pumping is started and monitor them as required. Accordingly, the City has operated the wells and has performed necessary periodic inspections as outlined in a plan approved under Section 9.1.1 of the CD-RAP.

Since 1989, the pumping rates at wells W420 and W421 were increased to the maximum extent practicable to achieve the greatest degree of source control. A summary of the 1998 monthly pumpages for wells W420 and W421 are presented in Tables 4-6 and 4-7, respectively. The wells maintained average monthly pumping rates exceeding the 25-gpm criteria. Wells W420 and W421 averaged daily pumping rates of 30.2 and 27.8 gpm, respectively.

TABLE 4-5**W410 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	3,840,290	86.0
February	3,387,460	84.0
March	3,795,340	85.0
April	3,629,980	84.0
May	3,615,780	81.0
June	2,674,100	61.9
July	2,840,500	63.6
August	2,837,730	63.6
September	2,669,310	61.8
October	2,912,330	65.2
November	2,849,740	66.0
December	2,935,160	65.8
TOTAL	37,987,720	72.3

TABLE 4-6**W420 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	1,551,400	34.8
February	1,318,470	32.7
March	1,481,930	33.2
April	1,422,540	32.9
May	1,352,960	30.3
June	1,385,110	32.1
July	1,413,660	31.7
August	1,362,960	30.5
September	1,166,630	27.0
October	1,459,590	32.7
November	718,250	16.6
December	1,252,430	28.1
TOTAL	15,885,930	30.2

TABLE 4-7**W421 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	1,280,860	28.7
February	1,174,820	29.1
March	1,277,090	28.6
April	1,243,170	28.8
May	1,220,630	27.3
June	1,218,480	28.2
July	1,249,390	28.0
August	1,222,700	27.4
September	997,200	23.1
October	1,251,110	28.0
November	1,227,290	28.4
December	1,224,120	27.4
TOTAL	14,586,860	27.8

Monitoring of the Drift-Platteville Aquifer source control wells occurred on a quarterly basis pursuant to the requirements of Sections 3.2 and 9.1.3 of the CD-RAP. A report of the results can be found in the 1998 Annual Report issued pursuant to Section 3.4 of the CD-RAP.

Section 9.2.3 of the CD-RAP requires Reilly to operate the Drift Aquifer gradient control well (W422) at a monthly rate of 50 gpm and monitor the well on a quarterly basis. Section 2(a) of the Reilly/City Agreement provides that the City operate the well beginning the day pumping is started and monitor it as required. Accordingly, the City has operated the well and has performed necessary periodic inspections as outlined in a plan approved under Section 9.2.1 of the CD-RAP.

A summary of the 1997 pumpage of the Drift Aquifer gradient control well is presented in Table 4-8. The City maintained a monthly average pumping rate of 58.4 gpm for W422, which exceeds the 50-gpm requirement.

Monitoring of the Drift Aquifer gradient control well occurred on a quarterly basis pursuant to the requirements of Sections 3.3 and 9.2.3 of the CD-RAP. A report of the results can be found in the 1998 Annual Report issued pursuant to Section 3.4 of the CD-RAP.

In accordance with CD-RAP, Sections 9.2.3 and 9.5.1, the City began pumping well W439 (the Northern Area Drift Aquifer Gradient Control Well) at 50 gpm. Well W439 began pumping in January 1996. A summary of the 1998 pumpage of the Northern Area Drift Aquifer Gradient Control well is presented in Table 4-9. Well W439 pumped at a monthly average rate of 55.6 gpm, which exceeds the required average monthly rate of 50 gpm.

Monitoring of the Northern Area Drift Aquifer Gradient Control well occurred on a quarterly basis pursuant to the requirements of Sections 3.2 and 9.2.3 of the CD-RAP. A report of the results can be found in the 1998 Annual Report issued pursuant to Section 3.4 of the CD-RAP.

In accordance with Section 9.7.2 of the CD-RAP, the City requested the Agencies to allow an additional gradient control well for the Platteville Aquifer. On August 15, 1994, the City requested the addition of well W434, which is located upgradient of the buried bedrock valley mapped by Hult and Schoenburg in U.S. Geological Survey Water Supply Paper 2211, Plate 2. The Agencies approved the addition of well W434 on September 29, 1994.

On May 9, 1995, the Agencies submitted to the City and Reilly a letter which stated that the report "Platteville Aquifer Gradient Control Well W434 Wellhouse Construction Work Plan" is approved.

The Platteville Aquifer Gradient Control Well W434 was scheduled to be constructed in conjunction with well W440. Well W440 did not meet expectations and the City, as directed by the

TABLE 4-8**W422 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	2,567,340	57.5
February	2,229,170	55.3
March	2,500,450	56.0
April	2,578,350	59.7
May	2,036,020	45.6
June	2,701,620	62.5
July	3,053,560	68.4
August	2,843,568	63.7
September	2,680,390	62.0
October	2,770,430	62.1
November	2,660,870	61.6
December	2,069,100	46.4
TOTAL	30,690,868	58.4

TABLE 4-9**W439 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	2,515,320	56.3
February	2,253,740	55.9
March	2,512,850	56.3
April	2,425,490	56.1
May	2,397,740	53.7
June	2,431,820	56.3
July	2,509,230	56.2
August	2,513,590	56.3
September	2,433,960	56.3
October	2,492,520	55.8
November	2,383,170	55.2
December	2,366,050	53.0
TOTAL	29,235,480	55.6

Agencies in correspondence (MPCA's Explanation of Significant Differences for Operable Unit 5) dated April 1997, terminated the construction. Well W434 wellhouse construction was completed during the spring of 1997.

In accordance with CD-RAP, Section 9.7.2, the City began pumping well W434 on June 10, 1997. Monitoring of well W434 was completed in accordance with the 1998 Sampling Plan. A summary of 1998 pumpage at well W434 (Platteville Aquifer Gradient Control Well) is presented in Table 4-10.

4.8 CD-RAP Section 10

Section 10.1.1 and 10.2.1 of the CD-RAP requires Reilly to submit to the USEPA, MPCA and MDH a plan for investigating certain multi-aquifer wells that may be adversely affecting the Mt. Simon-Hinckley, Ironton-Galesville, Prairie du Chien-Jordan and St. Peter Aquifers.

On July 6, 1995, the MPCA issued a letter to the City and Reilly, regarding review of the report for Leaking Deep Multi-Aquifer Wells and St. Peter Aquifer Multi-Aquifer Wells. In these reports, the City stated that no further St. Peter and Deep Multi-Aquifer wells are believed to exist in the study area that require abandonment. The Agencies' July 6, 1995, letter approved both of these reports. No further work is required at this time.

4.9 CD-RAP Section 11

Section 11.5.1 of the CD-RAP requires the City to prepare a plan, which addresses, among other things, actions to place an adequate soil and vegetative cover as needed to prevent soil erosion on city parks on the Site. The City performed routine maintenance activities including reseeding the soccer fields at the site in 1998.

4.10 CD-RAP Section 12

The Utility Superintendent has the responsibility to review all data upon receipt from laboratory and notify the Project Leader and Agencies of all exceedances of the Drinking Water Criteria in any municipal well, as outlined in Section 12.1.1 of the CD-RAP. No such exceedances were noted in 1998.

TABLE 4-10**W434 1998 Pumpages**

Month	Total Gallons Pumped	Monthly Average Flow Rate Gallons Per Minute
January	1,304,110	29.2
February	912,420	22.6
March	1,308,170	29.3
April	1,291,680	29.9
May	1,226,342	27.5
June	757,060	17.5
July	1,510,040	33.8
August	1,461,400	32.7
September	1,406,230	32.6
October	1,493,240	33.5
November	1,964,440	45.5
December	1,216,200	27.2
TOTAL	15,851,332	30.1

5. SCHEDULED REMEDIAL ACTION PLAN ACTIVITIES

Table 5-1 summarizes the expected schedule for CD-RAP activities during 1999. Many of the schedule dates cannot be established definitely because they depend on Agency review, inspection, and approval. Groundwater monitoring is an essential ongoing task.

TABLE 5-1
Expected Remedial Action Plan Activities - 1999

RAP Section	Item	Expected Timetable
3.3	Sampling Plan for 1999	Agency approval due
3.3	Sampling Plan for 2000	City to submit plan October 31, 1999
3.4	1998 Annual Monitoring Report	City to submit report March 15, 1999
4.2	Operation and Maintenance of the GAC System at Wells SLP 10 and 15	Ongoing
4.3	GAC Plant Monitoring	Continued monitoring in accordance with the RAP
4.3.5	1998 GAC Annual Report	City to submit report March 15, 1999
5.1	Mt. Simon-Hinckley Aquifer Monitoring	Refer to 1999 Sampling Plan
6.1.4	W105 Monitoring	Not required in 1999
7.1.3	Operation of W23	Ongoing
7.2.7	SLP4 Operation	Ongoing
7.3	Prairie du Chien-Jordan Aquifer Monitoring	Refer to 1999 Sampling Plan
7.4.2	Feasibility study on gradient control modification in the OPCJ	Feasibility study will be completed once any changes in water quality criteria have been agreed upon by the Parties
8.1.3	St. Peter Aquifer Monitoring	Refer to 1999 Sampling Plan
8.3	St. Peter Aquifer Remedial Action Gradient Control Well Operation - W410	Ongoing
9.1.3	Monitoring Drift-Platteville Aquifer Source Control Wells, W420 and W421	Refer to 1999 Sampling Plan
9.1 and 9.2	Operation and Maintenance of Groundwater Treatment Facility	Ongoing
9.2.3	Monitoring Drift-Platteville Aquifer Gradient Control Well W422	Refer to 1999 Sampling Plan
9.1 and 9.2	Operation and Maintenance of Groundwater Treatment Facility	Ongoing -
9.3.3	Drift-Platteville Aquifer Monitoring	Refer to 1999 Sampling Plan
9.5.1	Drift Aquifer Gradient Control Well Operation - W439	Ongoing
9.6	Drift-Platteville Aquifer Monitoring	Refer to 1999 Sampling Plan

TABLE 5-1

Expected Remedial Action Plan Activities - 1999

RAP Section	Item	Expected Timetable
9.7.2	Well W434 - Platteville Aquifer Gradient Control Well	Ongoing
11.5	Development Plan and Site Maintenance	Ongoing
12.1	Contingent Monitoring	Ongoing, if necessary